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ABSTRACT

This volume contains 14 papers from international sources that outline fundamental concepts and research interests connected to the measurement of quality in postsecondary education. Some of the papers consist of concept papers and others are more extensive reports of research underway or findings from recently concluded studies. The papers are as follows: "Quality in Higher Education and the National Education Goals" (Sal Corrallo); "The Role of American Higher Education in Making America First in the World in Science and Mathematics by the Year 2000 (Goal #4)" (Michael Nettles); "Comparative Aspects of Quality Assurance in Higher Education" (Edgar Frackmann); "Questions of Quality in UK (United Kingdom) Higher Education" (John Brennan); "Conceptualization of College Quality" (Jeffery Gilmore); "Taxonomy and Comparison of Approaches to Quality Assurance in Higher Education" (David Woodhouse); "Using Student Persistence Research to Strengthen the Quality of Teaching and Institutional Processes" (Robert Froh); "An International Perspective on Assessing Baccalaureate Program Outcomes" (Trudy W. Banta, Homer S. Fisher); "Institutional Research and Planning to Support Decentralization and Privatization: Building Self-Correction and Accreditation Systems" (Robert Froh); "Developing the Tools for Using National and International Data Bases: The Relationship to Issues of Content, Assessment, and Attainment" (E. Stephen Hunt); "New Approaches to Evaluation in Austrian Higher Education" (Hans Pechar); "Assessing the Quality of Higher Education: A Mexican Perspective" (Felipe M. Rizo); "The Research-oriented Dynamism of Education" (Jose Strubbe); "Explaining Differences in Dropout between Faculties in Dutch University Education" (Riekele Bijleveld). Appendixes list participants and offer information on the National Center on Postsecondary Teaching, Learning and Assessment. (JB)

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NATIONAL CENTER ON POSTSECONDARY
Teaching, Learning, & Assessment

# The International Working Conference On Measurements of Quality In Higher Education

HE 026 461

U.S. DEPARTMENT OF EDUCATION
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## Introduction and Overview

Michael Nugent and James L. Ratcliff

The first international working conference on "Measurements of Quality in Higher Education" was held May 23-24, 1991, in Washington, D.C.. The conference was sponsored by the Center for the Study of Higher Education (CSHE) and the National Center for Teaching Learning and Assessment (NCTLA), the Pennsylvania State University. Conference participants met to examine the possibility of establishing an interinstitutional cooperative research agenda that focused on factors relating to the cross-national measurement of quality in higher education.

This volume contains papers that outline fundamental concepts and research interests connected to the measurement of quality in postsecondary education. Participants reported on research on measures of quality that was at different stages in their respective countries. Some were beginning to formulate research projects, while others were associated with on-going research endeavors. As a result, some of the presentations consisted of concept papers while others were more extensive reports of research underway or findings from recently concluded studies. In that sense, this collection of papers reflects the international variation in the course and status of such research.

### Purpose of the May Meeting

The sponsors of the May meeting set out to capitalize on the interest in educational quality stimulated by the establishment of National Educational Goals in the United States. These goals were outlined in America 2000, a report sponsored by President Bush. The

relationship : these goals and quality in U.S. higher education is addressed by Sal Corrallo in .y in Higher Education and the National Education Goals." Corrallo discusses the ..ors involved in assessing college graduates' ability to think critically and solve problems. Similarly, Michael Nettles' paper, "The Role of American Higher Education in Making America First in the World in Science and Mathematics by the Year 2000," examines the role of quality assessment in the context of the objectives put forth in America 2000. Although Nettles focuses specifically on mathematics and science, he raises a fundamental issue: If the United States, or any other nation, intends to establish a high-quality educational program relative to international standards, it must develop a systematic understanding of other countries' methods of measuring and assessing quality.

At the May meeting, four specific research ideas were established as areas of interest for international collaborative research.

1. **International assessment of student learning in specific disciplines.**
2. **The impact of quality assessment on higher education systems.**
3. **Drop-out, retention, and enrollment patterns of students.**
4. **The role of peer review in the evaluation/assessment process.**

## The September Meeting

Following the May 24 meeting in Washington, D.C., the Center for Higher Education Policy Studies (CHEPS), ..versity of Twente, the Netherlands, and the Center for the Study of Higher Education, T.. ..lvania State University, sponsored a second international meeting on the measure..nt of quality in higher education. The meeting was held at the Napier Polytechnic, Edinburgh, Scotland, on September 5, 1991, immediately

after the European Association of Institutional Research conference (EAIR). The September meeting was attended by researchers from Belgium, Canada, Finland, Germany, Hong Kong, the Netherlands, Sweden, the United Kingdom, and the United States. The purpose of the second meeting was to continue the work started at the first meeting; the research agendas established during the Washington meeting were outlined and decisions were made about countries and individuals that would become research partners. Each of the four research ideas were examined according to the following points:

1. **Interest of various parties in particular research endeavors** (not all investigators will be interested in pursuing research in all four areas. Certain researchers may only be interested in undertaking research on one specific topic.)

2. **Level of participation** (some researchers may want to participate as key investigators on some projects, while others may want to play an advisory role.)

3. **Scope of research** (investigation on many levels, including international, systemic, federal, state, or institutional.)

4. **Coordination of research** (those researchers who will coordinate the investigation, either on a collaborative or individual basis.)

5. **Investigative models**

6. **Research methods**

7. **Sources of funding**

At the outset it was assumed that, given the number of participants at the Edinburgh meeting, the interest of group members would vary relative to the project discussed. After project interests were ascertained, several levels of interest were proposed. The cosponsors, CSHE, NCTLA, or CHEPS, did not intend to act the principal coordinators of any research

activities disc at this meeting, although all are engaged in research activities related to one or more o: proposed issues. Sponsors did not intend to control or coordinate the development of research proposals.

At least three approaches can be used to outline participation:

1. **Project coordinators and primary researchers**

   Individuals who have strong interests in one or more of the proposals may take on much more of the responsibility for funding and implementation.

2. **Active researchers**

   Individuals would participate in design and implementation within their home environments, and would provide a concomitant portion of the funding needed to carry out these activities.

3. **Participants**

   A third possible role was site participant in the research; instead of accepting the responsibilities for conducting research, an individual may be a site or national liaison, setting up interchanges with people actually involved in that research. Site participants would help identify the individuals and institutions in their home country that were interested in collaborative research in this area.

## This Volume

Whereas the complexity of defining educational quality in a single national system is significant, the complexity of determining quality at the international level is magnified by a many additional interacting cultural and societal factors. Quality as defined within different societies, higher education systems, and institutions, and among faculty members and students, poses interesting problems indeed. Jeffery Gilmore's paper, "Conceptualization of College Quality," underlines this point by describing a number of different conceptions of quality in U.S. undergraduate education. He cautions, though, that a conceptual framework

for determining quality on an international level should consider cross-national distinctiveness. In his paper, " New Approaches to Evaluation in Austrian Higher Education," Hans Pechar points out that although centralizing mechanisms within the Austrian higher education system do not emphasize quality performance at the institutional level, an increasing amount of attention has nevertheless been paid to the role of individual institutions as mechanisms for increasing quality. In this instance, the structural characteristics of weak institutional autonomy are overlooked in attempts to emphasize quality assurance at the individual institutions. At the other end of the spectrum is the British higher education system. Unlike Austrian higher education, British higher education is founded on a much greater degree of institutional autonomy and identity. John Brennan outlines the various levels and dimensions of quality assessment in "Questions of Quality in UK Higher Education." In addition, he discusses the potential impact of new policies proposed in the White Paper published by the British Government in May 1991, as well as two on-going research projects on the assessment of quality.

Several conceptual frameworks and taxonomies have been presented in this volume to categorize mechanisms involved in quality assurance. David Woodhouse provides one description in "Taxonomy and Comparison of Approaches to Quality Assurance in Higher Education." His taxonomy is separated into type of body (government, institution, etc.), scope (institution, discipline, etc.) and authority within the institution (external, internal, etc.). Edgar Frackmann describes a framework for understanding quality assurance cross nationally in "Comparative Aspects of Quality Assurance in Higher Education." His framework is presented in the form of a matrix, distinguishing between internal/external and implicit/explicit quality assurance mechanisms in which factors such as self-regulation, peer review, market mechanisms, and government control manifest themselves.

The difficulties of understanding assessment across national higher education systems is discussed by Trudy Banta and Homer Fisher in "An International Perspective on Assessing Baccalaureate Program Outcomes." Though differences in higher education systems and assessment procedures exist not only among European countries but also across the Atlantic, there are also important similarities. Academic institutions struggle to retain autonomy in the face of increasing demand for external control. One main roadblock to international

compa s been the lack of comprehensive cross-national data on higher education system udents based on an international comparative framework. E. Stephen Hunt addresse s issue in "Developing Tools for Using National and International Data Bases."

Ot er issues presented in this volume deal with the importance of research, student persistence, and philosophical and ideological factors in defining quality assurance. In "The Research-oriented Dynamism of Education," Jose Strubbe discusses the role of research in determining educational quality. According to Strubbe, dynamic research plays an important role in establishing programmatic, curricular, and institutional quality in Belgian universities. He believes that research policy is an important determinant of educational quality. The relationship between student persistence and quality is discussed in two papers. In "Using Student Persistence Research to Strengthen the Quality of the Teaching and Institutional Process," Robert Froh advocates the use of student persistence as a factor in the analysis of quality cross nationa iscusses Riekele Bijleveld's paper, "Explaining Differences in Drop-out Between Faculties in Dutch University Education" (also included in this volume) in which Bijleveld compares drop-out levels between different Dutch faculties, or departments. Bijleveld points out that a study of the substantial differences across faculties in the Netherlands in student drop-out rates promises to provide an informative contrast between traditional and innovative programs. Specifically, Bijleveld examines an innovative program at the University of Limberg in contrast to the more traditional Dutch university.

The philosophical and ideological nature of quality assessment is touched upon in the conclusion of "Quality Assessment in Postsecondary Education: A Mexican Perspective" by Felipe Rizo. Rizo points out the importance of recognizing that questions related to the evaluation of effectiveness and efficiency are fundamentally philosophical and ideological in Mexico. Viewed in light of international comparisons, the philosophical and ideological nature of these questions multiply, becoming a challenge to comparative researchers.

This volume acts as the starting point for future cooperative cross-national research in higher education. May meeting, a second meeting was held on September 5, 1991, in Edinburgh, Scotland, which was co-sponsored by CSHE and CHEPS. A third meeting, sponsored jointly by the Council for National Academic Awards (CNAA), CSHE, and CHEPS has been planned for April 15 and 16, 1992, in London, England. These jointly-

sponsored meetings are evidence of the successful establishment of cross-national, interinstitutional relationships. Participants are listed in the appendix for readers who wish to contact authors of particular papers or to contact researchers from participating countries for additional information.

# Quality in Higher Education and the National Education Goals

Sal Corrallo[1]
U.S. Department of Education

## Background

Historically, the identification and measurement of quality in higher education has been treated much like the weather. Everyone talks about it but few can do anything about it. In 1989 the National Center for Postsecondary Governance and Finance conducted a national symposium on "Quality in the Academy." At the symposium, Estela Bensimon noted that, "Although there is renewed interest in quality among key actors in leadership positions, little is known about what they--and various institutional and systemic actors--mean when they call for quality." Four perspectives on quality in the academy were expressed in papers presented at the symposium. The views included those of the trustees, the president, planning officers, and state policy makers.

In her discussion of Frank Schmidtlein's planning-focused paper, Bensimon reports the author's suggestion that ". . . just about everything an institution does and is can be considered within the context of quality." In Robert Birnbaum's piece, he offers this advice: ". . . the various dimensions of quality often have structural or procedural requirements that are in conflict." Birnbaum suggests that fixed trade-offs exist among teaching, services, and research (some might call it an "Iron Law of Faculty Outputs"), so that devoting time to one may mean that the others will suffer. In the section of the Bensimon paper entitled "Issues to Consider," the reader is urged to keep three issues in mind while reviewing the paper. The second issue is measuring quality on campus. She asks, "Does it matter that institutional leaders tend not to define quality in terms of the development of the total student, in both the cognitive and affective domains?"[2]

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[1]This paper was prepared by the author in his private capacity. The views expressed are the author's. No official support by the U.S. Department of Education is intended or should be inferred.

[2]Estela M. Bensimon, "Quality in the Academy: Proceedings from a National Symposium," National Center for Postsecondary Governance and Finance, University of Maryland, College Park, Maryland, 1989.

Although the papers do not necessarily suggest a lack of concern with student achievement as a measure of quality on campus, the call for just such an evaluation of college learning by the President and the governors suggests that others feel differently. To that end, National Education Goal #5 was formulated: By the year 2000, every adult American will be literate and possess the knowledge and skills necessary in a global economy and exercise the rights and responsibilities of citizenship. Goal #5 includes an objective directed at the learning of higher order thinking and communication skills of college graduates. According to that objective, "The proportion of college graduates who demonstrate an advanced ability to think critically, communicate effectively, and solve problems will increase substantially."

The U.S. Department of Education is currently working to identify one or more approaches to assessing achievement of this objective. This will not be an easy or short-term task. The National Goals Resource Group's March 1991 Interim Report noted that

> . . . neither national nor state information is currently available on the ability of college graduates to "think critically, communicate effectively, and solve problems.

Further,

> If the National Goals Panel wishes to assess the ability of college graduates to think critically, to communicate effectively, and to solve problems, a new kind of assessment will have to be created. That assessment might be a type of National Assessment of Educational Programs (NAEP) at the college level, given to a national sample of college students at different kinds of schools across the Nation. To have credibility, such an assessment would have to take into account differences in the postsecondary institutions in America and the fact that the pluralistic system in place today has extended postsecondary educational opportunities to the broadest cross section ever of America's citizens. Developing a NAEP-like assessment would be controversial for many reasons. It would require 5 years or more to develop and an investment of several scores of millions of dollars to make operational.[3]

Key Issues and Concerns

In considering the development of an assessment strategy, four concerns or issues

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[3]National Educational Goals Resources Group, Interim Report, March 1991.

must be ad

First, : must be a common understanding and ultimately agreement about the specific skills dents are expected to have achieved in light of the larger goal of developing a competitive work force and assuring responsible citizenship. Not only must these skills be clarified, but they must be defined in a manner that allows the impact of the educational experience to be assessed. In addition they should be defined from a teaching/learning perspective, so that their enhancement can be factored into classroom experiences? Specifically, how can these skills be enhanced by classroom teaching/learning experiences.[4]

Second, how much can students be expected to know; what levels of learning or performance standards are to be attained? Students do not come into postsecondary

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[4] A 1987 report which provided suggestions for the State of New Jersey's College Outcomes Program, used much the same language when referring to the "broad based common skills that are necessary in all disciplines and fields." More specifically they "include analysis, problem solving, critical thinking, quantitative reasoning, and written and oral expression. These skills are seen in a students ability to find, use, and present information." Further elaboration follows:

"These are skills necessary to critically analyze and utilize information (sometimes referred to as "higher order" skills). Specifically they include the skills necessary to:

a) Accumulate and Examine Information - including the skills necessary to : determine the kinds of information needed for a given task; construct and implement a systematic search procedure, using both traditional and computerized methods; discard or retain information based on initial screening for relevance and creditability; and develop abstract concepts appropriate to the task at hand for initially ordering information which is retained.

b) Reconfigure, Think About, and Draw Conclusions from Information - including skills necessary to: evaluate the interpretations presented by others in terms of their assumptions, logical inferences, and empirical evidence; reconfigure information in ways that suggests ranges of alternative interpretations and evaluate their relative merits; construct hypotheses that logically extend thought from areas in which information is already available into areas where it is not ecify the additional information which might confirm or disconfirm those hypoth draw conclusions based on all of the above.

c) Present Information - Including the skills necessary to express one's own ideas in written, oral and graphic forms which will be intelligible and persuasive to a variety of audiences."

education with the same learning experiences, family backgrounds, or cognitive abilities. Keeping the standards low reduces the value of the program, while making them too high can be troublesome and perhaps unrealistic for students and institutions alike. Is it realistic to expect all to leave with the same set of skills? What level should they be expected to have achieved to utilize those skills?

Third, can the attainment of these skills be measured? Are reliable assessment procedures available in the open market that can be used, in whole or part, to measure learning experiences? Can these skills, which relate more to post-school application on the job and as a citizen, be measured that soon after the college experience? Can such tests maintain relevance and reliability over time? Should the assessment of student learning be limited to the national level? Can assessment programs, if properly designed and implemented at the state or institutional level, be aggregated to a national level? Lastly, some suggest that much of the information needed is available in current data banks. In lieu of collecting new information, are proxy measures available, at least for short-run use?

Fourth, who should be tested--some or all of the students? Can the same assessment procedures be used for all students and all learning experiences in all institutions (i.e., for two-year graduates, four-year students, graduate students, and professional school graduates, among other groups)? How often should the tests be administered? The State of New Jersey has a similarly focused testing program that assesses students prior to entry into the junior year of college. Who will do the assessment--institutions, states, private agencies, the federal government? What problems are to expected in large-scale testing? How much will a testing program cost and who will pay?

Current Experiences

In addressing these issues and concerns, there are a number of current activities and experiences from which valuable information can be drawn. Each of these activities provide unique insights into issues and concerns noted above. These include:

1. State Assessment Experiences: A number of states have or are planning to implement postsecondary assessment programs.[5] The State of New Jersey has been notable for its postsecondary assessment activities. Florida and other states have also implemented state-level assessment programs that can provide valuable insights for a national assessment process.

2. Institutional Assessment Activities: A number of institutions have been in the forefront of the modern assessment movement, many assessing the general intellectual skills

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[5] Christine P. Paulson, State Initiatives in Assessment and Outcomes Measurement: Tools for Teaching and Learning in the 1990's: Individual State Profiles, Educational Commission of the States, Denver, CO, May 1990.

of graduating students. Increasing attention to institutional assessment is coming from regional accrediting agencies.[6]

3. Relationship to Pre-Collegiate Testing: The assessment of the thinking and communication skills of college graduates is also called for under National Education Goal #3 for grades four, eight, and twelve. There are numerous approaches for the testing of these skills at the postsecondary education level. They include the defining and testing of basic and more advanced skills. New York[7] and Vermont[8] are two examples.

4. Testing Services College Testing Experiences: Both the American College Testing Service (ACT) and Educational Testing Services (ETS) have a number of current activities focused on the assessment of basic learning skills at the college level. The ACT College Outcomes Measures Program is said to assess communication ability, problem-solving, and value clarification for three content areas: functioning within social institutions, using science and technology, and using the arts. The ETS Higher Education Assessment Program has a series of major field achievement instruments as well as other assessment instruments on the shelf. In addition, a number of smaller testing service companies, such as The California Academic Press, have developed more narrowly focused instruments for assessing critical thinking, writing, and other skills.

5. Job Skills Issues: American industry, we are told, must upgrade its productive capability to keep up with the rest of the world. This means both upgrading capital equipment and related work-force skills. Given the new equipment and production processes, industry is constantly faced with ascertaining the skills needed to perform a job in this new environment. It should be noted that the Secretary's Commission on Achieving Necessary Skills, U.S. Department of Labor, plans to address this and other issues through the U.S. Department of Education's National Adult Literacy Study currently in the design stage. An extensive set of workplace skills is identified in their June 1991 report, including those identified in the national goal.[9] Examples of the application of skills are provided from a workplace perspective. Although many carry over to the practice of citizenship, most

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[6] Western Association of Schools and Colleges, "Achieving Institutional Effectiveness Through Assessment: A Resource Manual to Support WASC Institutions," Working Paper, Final Draft, June 1991.

[7] New York State Education Department, Basic and Expanded Basic Skills: Skills for Validation Study, Albany, NY, July 1990.

[8] The Vermont State Department of Education, "Vermont Writing Assessment: The Pilot Year," Montpelier, VT, September 1990.

[9] The Secretary's Commission on Achieving Necessary Skills, "What Work Requires of Schools: A SCANS Report for America 2000," U.S. Department of Labor, Washington, D.C., June 1991.

are unique to the workplace.

Beyond the Assessment of Higher Order Thinking and Communication Skills

Goal #5 focuses on the enhancement of critical thinking, problem solving and communication skills. Paul R. Pintrich, in a paper prepared for a U.S. Department of Education-sponsored conference on postsecondary assessment, referred to an increased interest in critical thinking and problem solving. He suggested that

> Although this attention to the topic is interesting and exciting, there is a great deal of theoretical confusion concerning the nature of critical thinking and problem solving. Researchers and practitioners are addressing the topic from a multitude of perspectives and the constructs are not clearly defined.

He cites Glaser (1984), who believed that five issues must be considered in future research on general cognitive skills. Pintrich implies that these questions can be thought of as guiding principles for the assessment of student learning. These have been paraphrased:

> 1) Consideration must be given to how general cognitive skills are or can be taught.
>
> 2) Consideration must be given to how current knowledge-based models of cognition are applied to the teaching of general problem-solving skills.
>
> 3) Consideration must be given to how instruction fosters general cognitive skills.
>
> 4) Consideration must be given to how cognitive skills learned in one domain are transferred to another domain.
>
> 5) Consideration should be given to the effectiveness of the teaching process for critical thinking and other general cognitive skills.

Pintrich argues that the most effective assessment of critical thinking and problem solving takes place when a theory or model of how instruction will lead to critical thinking or problem solving, has been defined and is being tested. Assessment of the process would include information on the appropriateness of the curriculum and how the subject matter is taught, the current status and preparation of both faculty and student, the institutional and faculty support and commitment for the process of teaching and learning. He concludes that,

> Regardless of the level of the local model (e.g., course departmental, institutional), the development of a local model of critical thinking would help to delineate how the "independent" variables of course tasks and activities, curriculum offerings, and/or institutional dimensions theoretically influence the "dependent" variable of students'

c ding.

He goes that,

> from this kind of assessment program would provide very useful feedback to in rs (or other program designers) about the relative efficacy of different aspects of th r program.[10]

Assessment then should not merely assess the level of skills achievement, but also should identify the determinants that enhance the learning of these skills. An assessment process that only measures outcomes is limited and not consistent with the intent of Goal #5.

Towards Quality Through Assessment

We currently have a national weather service that provides hourly assessments of weather conditions across th on, even identifying the causes of those conditions. Yet even if we wish to, we ca ue with the weather other than enjoy it when it is pleasant or run for shelter whe bad. However, unlike the weather many things can be done to enhance the quality of students' educational experience. The development and implementation of a system to assess student learning is a necessary first step. It can, if properly designed, provide a means of comparing the performance of graduates by programs, schools, and states. It can also be used to determine the evenness of learning experiences across course and program domains. It can isolate, from a program perspective, effective and less-effective programs and practices and perhaps determine if there is an "Iron Law of Faculty Output."

In sum, quality improvement cannot occur at the college level without an effective and reliable assessment of the teaching/learning process. Unlike attempts to control the weather, much can be done to keep the sun shining and the student learning in the college classrooms of the nation.

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[10] Paul R. Pintrich, "Assessing Student Progress in College: A Process-Oriented Approach to Assessment of Student Learning in Postsecondary Settings" in Postsecondary Assessment Conference: Report of the Planning Committee, November 20, 1986, U.S. Department of Education, Washington, D.C.



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# The Role of American Higher Education in Making America First in the World in Science and Mathematics by the Year 2000

Michael Nettles
University of Tennesee

## Introduction

America's colleges and universities have a vital role to play in helping to achieve Goal #4, "U.S. students' becoming first in the world in mathematics and science achievement by the year 2000." But many gaps need to be filled in our knowledge and understanding about the present status and function of American mathematics and science as well as about the role of higher education toward advancing mathematics and science education before a meaningful strategy can be forged toward achieving the goal. The following questions must be addressed in order to fill the knowledge void: (1) what contributions are being made by America's colleges and universities toward the international competitiveness of the United States in mathematics and science?; (2) what is the current quality of the contributions by American colleges and universities in mathematics and science teaching and learning?; (3) how do the contributions of U.S. colleges and universities compare (amount and quality) with those of colleges and universities in the rest of the world?; and (4) how can higher education's efforts toward making America first in the world in mathematics and science, be improved?

In this paper, methods are suggested that will assist America's colleges and universities develop a strategy for understanding and improving their contributions to Goal #4. Methods are also suggested concerning the provision of data and information needed for setting specific benchmarks and monitoring progress toward achieving the goal. Since Goal #4 has a world rather than a national context, strategies for conducting international comparative studies, for goal setting and monitoring progress, also are proposed here.

American higher education's contributions toward becoming first in the world in mathematics and science should be viewed as follows:

1. Helping to improve mathematics and science instruction as well as outcomes in the primary and secondary schools in the following ways:

    A. by producing more and better prepared mathematics and science teachers, and encouraging mathematics and science majors to enter teaching careers;

B. by retraining and providing continuing professional development for existing mathematics and science teachers by sharing facilities, faculties, technology, and summer institutes, etc.;

C. by providing alternative routes to licensing and certification so that more of the talented mathematics and science teacher prospects will become interested in entering the teaching profession;

D. by developing better ways of assessing teachers' and students' knowledge of mathematics and science and their skills in using mathematics and science in the teaching and learning process;

E. by producing early intervention strategies for young people to inform them about their mathematics and science career options and encouraging them to achieve in mathematics and science.

2. Strengthening the undergraduate mathematics and science curricula for (a) college students majoring in mathematics and science disciplines, (b) students preparing to become teachers of mathematics and science in elementary and secondary schools, and (c) students who are not majoring in mathematics and science, but are pursuing associate and baccalaureate degrees in other disciplines and take mathematics and science courses as part of their general education requirements.

3. Integrating mathematics and science into the core or general education curricula required for all postsecondary students.

4. Developing and improving the technology and teaching strategies so that students are encouraged and motivated to study and enjoy learning mathematics and science in college.

The first of these four roles, training more teachers, is explicit in the objectives of Goal #4. The second, third, and fourth roles are vitally important, but are only implicitly reflected in the objectives of Goal #4. Consequently, many people interpret the objective of strengthening curricula to [illegible] only to elementary and secondary schools since the emphasis in the objective is placed upon [illegible] early grades." However, the need is equally urgent at the college level, and in fact improvements in the early grades are partially dependent upon improvements in higher education.

The need to strengthen college curricula in mathematics and science may be

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overlooked because of the popular perception that, compared to most developed nations, America has superior colleges and universities but inferior primary and secondary schools. That perception is influenced primarily by three factors: (1) by the strength of graduate programs in U.S. universities that attract and educate increasing numbers of students from abroad, (2) by the vast and important productivity of the nation's leading university researchers, and (3) by the track record established by U.S. scholars in health and medical research, other scientific discoveries, numbers of patents and copyrights, and the number of Nobel prize winners. The National Science Foundation routinely documents the superior research productivity of the U.S. as measured by patents, licenses, and fees for technology, and citation ratios (Science and Engineering Indicators, the National Science Board biennial report; and International Science and Technology Data Update).

The popular perception of superior postsecondary education is not, however, fueled by the numbers of American citizens receiving bachelor's, master's, and doctoral degrees in mathematics and science disciplines, nor by the widespread strength of undergraduate mathematics and science curricula in the nation's colleges and universities. The number of Americans majoring in mathematics and science at all degree levels is declining, and national or international assessments of mathematics and science outcomes at the postsecondary level do not permit U.S. associate and baccalaureate degree recipients to be compared with their counterparts abroad. Examinations at the conclusion of the college curriculum are not the norm in U.S. colleges and universities as they are in most European nations.

Table 1 shows the declining numbers of American students among mathematics and science degree recipients at all levels in U.S. colleges and universities. These data provide a baseline (1991) that can be used to monitor progress toward reversing this negative trend.

Cooperative arrangements need to be established with other nations in order to provide comparable productivity indices that take into account the problems of determining equivalent degree levels, program types, and program content. Currently available evidence does not demonstrate whether the undergraduate science and mathematics curricula in America's colleges and universities are similar or different from others throughout the world, whether the programs are internationally competitive, nor whether American baccalaureate degree recipients--regardless of major--have acquired the mathematics and science skills through a general education curriculum that will make them internationally competitive.

The fact that American colleges and universities attempt to educate the masses rather than a select few as in most other nations, suggests that the challenges to becoming first in undergraduate mathematics and science education as well as in general science literacy among adults, are no less formidable than they are for primary and secondary schools in the United States.

## Monitoring Progress

How will the nation set goals and monitor progress toward achieving the goals? Some data bases already exist that report on the status and progress of colleges and universities in enrolling and graduating students in mathematics and science and related

disciplined among the existing data bases are the Integrated Postsecondary Education System (IPEDS), the Recent College Graduates Survey (RCGS), the National Postsecondary Student Financial Aid Survey (NPSFAS), and longitudinal data from the National Longitudinal Study (NLS '72) and High School and Beyond (HSB '80 and '82). In four years NELS 88 cohort of eighth graders will reach the age of eligibility for attending college. With the exception of IPEDS, each of these data bases is composed of a national representative random sample of students and is useful for estimating the demand by American citizens for mathematics and science curricula. These data bases include race, sex, and citizenship distributions that also permit ethnic and gender comparisons within the U.S. Much work, however, is needed in order to make important international comparisons of the supply of mathematicians and scientists with the supply of teachers of mathematics and science. Parallel efforts are needed in developing ways to measure and compare the quality of college mathematics and science curricula and student achievement in American colleges and universities compared with those abroad. Establishing cooperative data exchange agreements with foreign nations, comparable procedures and methods for collecting data, and common language and definitions for describing degree levels and other outcomes, are among the tasks that need to be accomplished.

The data and information for higher education report cards should correspond to the objectives of Goal #4 and to higher education's contributions toward that national goal. According to the President and governors, higher education's most important contributions toward making America first in the world in mathematics and science are as follow:

1. to increase by at least 50 percent the number of students who are trained to teach mathematics and science in the nation's elementary and secondary schools;

2. to increase the overall number of American students receiving baccalaureate and doctoral degrees in the fields of mathematics, science, and engineering in U.S. colleges and universities;

3. to increase the number of women, Blacks, Native Americans, and Hispanics who major in science, mathematics, and engineering in college and increase the proportion that they represent of the total baccalaureate, master's, and doctoral degree recipients in those fields.

In addition, appropriate assessment instruments (examinations) need to be developed for international comparisons of America's college and university mathematics, science, and general education curricula and for measuring the mathematics and science achievements and abilities of America's college graduates--those who major in mathematics and science as well as for college students in general.

This will require international cooperation, collaboration, and coordination. The U.S. Department of Education should make this effort a priority, and use the resources of its Office of Educational Research and Improvement (OERI), especially the Office of Research (OR) and the National Center for Education Statistics (NCES), toward that end. The



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National Science Foundation (Science Resource Studies) should then upgrade its assessments by using the international comparisons data and information collected by the U.S. Department of Education.

Assessment--The Report Card

What sources of data and information currently exist for providing baseline reports on the status of mathematics and science in American higher education and for reporting progress in the years ahead? The initial report card is scheduled for September 1991 with subsequent report cards due annually.

September 1991

The Integrated Postsecondary Education Data System (IPEDS) is an annual survey conducted by the U.S. Department of Education that can be used to provide baseline 1991 data on the number of baccalaureate, master's, and doctoral degree recipients by major field, ethnicity, and sex in colleges and universities. State and institutional comparisons within states are also possible using IPEDS. This data base can also be used to monitor the progress up through the year 2000 and beyond. IPEDS, however, does not include data on the number of teacher education majors who have an emphasis or concentration in mathematics and science.

The IPEDS does not provide data on the number of Americans or foreign nationals who enroll or receive their degrees abroad, but it does include the number of foreign nationals enrolled and receiving degrees in U.S. colleges and universities. In order for the President's and governors' report card to be complete, degrees awarded by colleges and universities in Canada, Europe, Japan, Korea, and China, etc., in mathematics and science major fields and mathematics and science teacher education disciplines that are comparable to those offered in the U.S., should receive some monitoring. This will require a cooperative arrangement between the U.S. and each of these other nations.

The Division of Science Resources Studies of the National Science Foundation conducts an annual survey of Graduate Science and Engineering Students and Postdoctorates (GSESP). The survey includes all departments in science disciplines at all U.S. colleges and universities that offer master's and doctoral degrees in the sciences. The sciences include all physical, mathematical, computer, agricultural, biological, social, engineering, health fields, and psychology. The results from this survey can be used to monitor trends in student enrollment in U.S. master's and doctoral degree programs by the sex, race/ethnicity, and citizenship of students enrolled. This survey also reports the major source of financial assistance that students receive at these graduate schools. Like IPEDS, however, international comparisons are not currently available.

The National Science Foundation also annually reports the detailed characteristics of doctoral degree recipients who earn their degrees in mathematics, science, and engineering fields from U.S. universities. These data are gathered via the Survey of Earned Doctorates (a joint effort sponsored by the NSF and four other federal agencies), which canvasses all

graduate student ing Ph.D.s in a given year. In addition, the Institute of International Education (IIE), ate foundation dedicated to organizing and facilitating international student exchange nducts its Annual Census of Foreign Students (foreign citizens enrolled in U.S. institution all degree levels). The NSF and IIE data bases constitute the most important current lections of information on foreign students enrolled in U.S. mathematics and science progra s, as well as regularly tracking the performance of U.S. students attending U.S. universities in these fields. Data are also collected by the IPEDS surveys of the U.S. Department of Education, based on institutionally reported information.

Data concerning degree production and student achievement in mathematics and science abroad are reported regularly by the national ministries of education of countries that participate in either the UNESCO or OECD data exchange programs. These data are occasionally compared with U.S. data in NSF and other data bases, but the lack of refined criteria and standards for direct comparison makes such analyses difficult and problematic. This will need to be corrected in order to produce report cards on Goal #4.

The Higher Education and Adult Learning Division of the U.S. Department of Education (OR/OERI) is currently engaged in a joint project with the NSF to develop a coding system for foreign institutes for the Survey of Earned Doctorates (in which the Education Department participates). This project, led by E. Stephen Hunt, will result in a coding system that allows comparability between U.S. and foreign institutions by level and types of degrees. While it is a start in the right direction, more such work is needed.

Adequate measures for judging the strength and quality of college and university mathematics and science curricula or for international comparisons do not exist for the September 1991 report card. Such measures need to be developed for the report cards in the year 2000 and beyond. The science and mathematics parts of the GRE are inappropriate for this purpose because they were designed for and are taken only by the select sub-population of baccalaureate degree recipients who plan to attend graduate school; therefore the content of these tests do not reflect the achievement outcomes expected of the general population of college graduates or the general population of science and mathematics majors in undergraduate school. In other words, the results of these tests do not represent the overall strength of the undergraduate curricula or the science and mathematics major field curricula. Unlike other nations that comprise the comparison group for most international comparative studies in IEA and IEAP, examinations are not normally (currently) required of graduating college seniors from U.S. colleges and universities.

The Major Field Achievement Tests, developed jointly by the Educational Testing Service and Graduate Record Examination Board in 1989, are multiple-choice tests used by a small number of colleges and universities for assessing the achievement of college seniors in mathematics and science (biology, chemistry, and physics) curricula. Some of the science professional societies have also developed standardized multiple-choice tests for college seniors majoring in science disciplines, e.g., chemistry. While these may be useful instruments to build upon, they may not sufficient for assessing progress toward achieving national goals or for international comparisons for the following reasons:

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1. They do not reflect an agreed-upon national consensus of the skills and knowledge that students graduating from U.S. colleges and universities with mathematics and science majors nor those who are not mathematics and science majors should acquire.

2. They do not reflect a national consensus on the methods of assessment that college and university faculty believe should be used to demonstrate progress toward national goals.

3. In their present form they do not lend themselves to international comparisons nor do they reflect an international view or agreement about the science and mathematics skills and knowledge that college graduates in mathematics and sciences, teacher education, or other disciplines should acquire by the time they graduate from college.

Recommendations

1. The IPEDS should be used to report annually the trends on degrees conferred by U.S. colleges and universities and that data on U.S. citizens and foreign citizens should be better edited for accuracy.

2. The survey of Graduate Science and Engineering Students and Postdoctorates (GSESP) should be used to report and monitor trends in graduate student enrollment in the mathematics and science disciplines by sex, race/ethnicity, and citizenship in U.S. colleges and universities.

3. The president and the governors should establish an international working group that will establish a working relationship with other nations to develop comparable data bases to the IPEDS and the GSESP so that U.S. science and mathematics enrollments and degrees awarded can be compared with those of other nations.

4. As part of the cooperative arrangement developed in recommendation 3, the President and the governors should create a higher education version of the national examination system that permits colleges and universities to measure both the strength of undergraduate science and mathematics curricula, and the attitudes, skills, and achievement levels of students graduating from science and mathematics curricula in U.S. colleges and universities compared with their counterpart science, mathematics, and teacher preparation programs and students in other developed nations, including assessments that compare general knowledge and skills that reflect college graduates (non-science and mathematics majors) from U.S. colleges and universities compare with counterparts in other nations. This will require international committees with representatives from participating nations to plan and develop these examinations.

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5. A for evaluating the outcomes of intervention plans and strategies of U.S colleges and universities should be developed to measure their effe Particular attention should be given to evaluating:

A Retraining and providing continuing professional development to existing mathematics and science teachers through sharing of facilities, faculties, technology, and summer institutes, etc.;

B. Developing better ways of assessing teachers and students on their knowledge of mathematics and science so that teaching and learning is improved and to facilitate entry of more and better mathematics and science professionals into elementary and secondary school teaching;

C. Producing early intervention strategies to young people to inform them on mathematics and science options and to encourage them to achieve in those areas.

6. The organization responsible for licensing and certifying teachers in each of the 50 states should be requested to provide data for each report card on the number of current mathematics and science teachers by race and sex who are certified and licensed to teach in the courses of mathematics and science to which they are assigned. The Council of Chief State School Officers has a state-by-state data base that contains these data (reported for the first time in March 1991). Second, the state organizations should also provide data on the total number of certified and licenses mathematics and science teachers (currently teaching and not teaching) by race and sex. Third, the state organizations should provide data on the number of newly hired teachers in mathematics and science by race and sex who are certified and licensed. Fourth, the National Center for Education Statistics should provide data from the Schools and Staffing Survey on the number of current mathematics and science teachers who have a college degree major in the subject they are teaching.

## Conclusion

No one should expect the achievement of the steps outlined above to be easy, but they will never be accomplished until a coordinated effort is begun. In the course of setting up the comparative information system needed by U.S. educators and policy makers, the important differences that distinguish American higher education (and secondary preparation) from foreign counterparts will have to be noted and accommodated. In some cases, what occurs in the U.S. at the postsecondary level may be secondary education elsewhere; other examples of this kind will challenge the process. Meaningful assessment data, however, must be developed, including international comparisons. The bold but so far isolated efforts

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of agencies like NSF and OERI need to be built upon and coordinated in order to enable the nation to achieve the vital objectives of National Education Goal #4.

**Table 1**

**Trends in Degrees Conferred to American Students by U. S. Colleges and Universities in Math and Science Disciplines**

| | Total Award | Life Sciences | | Physical Sciences | | Mathematics | |
|---|---|---|---|---|---|---|---|
| | | 1978-79 | 1988-89 | 1978-79 | 1988-89 | 1978-79 | 1988-89 |
| B.A. | Total Degrees Awarded | 48,794 | 36,079 | 22,861 | 17,204 | 11,624 | 15,237 |
| | Degrees Awarded to American Students | 47,907 | 35,192 | 22,168 | 16,593 | 11,376 | 14,686 |
| | Americans as a % of Total | 98.2 | 97.5 | 97.0 | 96.4 | 97.9 | 96.4 |
| | % Change in Degrees to American Students | -27 | | -25 | | 29 | |
| | % Change in Proportion of Degrees that American's Received | -.7 | | -.6 | | -1.5 | |
| M.A. | Total Degrees Awarded | 6,831 | 4,933 | 5,406 | 5,737 | 3,033 | 3,424 |
| | Degrees Awarded to American Students | 6,367 | 4,279 | 4,700 | 4,431 | 2,561 | 2,405 |
| | Americans as a % of Total | 93.2 | 86.7 | 86.9 | 77.2 | 84.4 | 70.2 |
| | % Change in Degrees to American Students | -33 | | -6 | | -6 | |
| | % Change in Proportion of Degrees that American's Received | -6.5 | | -9.7 | | -14.2 | |
| Ph.D. | Total Degrees Awarded | [illegible]42 | 3,533 | 3,102 | [illegible] | 730 | 882 |
| | Degrees Awarded to American Students | [illegible],199 | 2,966 | 2,615 | [illegible] | 568 | 462 |
| | Americans as a % of Total | 90.3 | 83.9 | 84.3 | 70.6 | 77.8 | 52.4 |
| | % Change in Degrees to American Students | -7 | | 4 | | -19 | |
| | % Change in Proportion of Degrees that American's Received | -6.4 | | -13.7 | | -25.4 | |

Source: Race Ethnicity Trends in Degrees Conferred by Institutions of Higher Education: 1978-79 - 1988-89.

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# Comparative Aspects of Quality Assurance in Higher Education

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## Introduction

Quality and quality assurance in higher education have gained new attention in Europe and elsewhere. In order to better understand this specific concern about educational quality, the question might be posed: Why is this worry about quality not similarly directed toward the research function of universities?

To tackle this question one has to investigate how and whether the research function of universities is being scrutinized. The traditional German university is a research university; despite the Humboldtian principle of the "unity of research and teaching," research is the primary and prevalent function of the university, whereas teaching appears as a by-product.

If one accepts research as a service function directed towards an "audience" (to avoid the term "customer"), one might ask whether this audience is able and has the means not only to judge the quality of these services but also to put sanctions and rewards to work. Research indeed seems to be a field of societal services in which judgment, rewards and sanctions, and quality control seem to be quite well established, even if one contends that research is a field that can only be judged adequately by the researcher community itself. Three main mechanisms account for the existence of quality control in research:

(1) Research is perhaps one of the most prominent areas in which professional (self) control is evident. Whatever researchers do, as soon as they expose their research results to an interested audience by publication or whatever means of communication (indispensable to their research activity) they

ex[ ]search to the judgment of their peers. This permanent peer
jud[ ]lies and impacts implicit self-control mechanisms on the
pro[ ]researchers choose research subjects, methods for research and
style[ ]plication acceptable to their peers and base their research on the
result[ ]eir peers' prior research (cf. Hardy et al., 1983).

(2) Peer review and peer judgment is a widely accepted mechanism used by research funding agencies for the allocation of public and foundation money. This kind of explicit quality control seems to be accepted as a valuable and reliable mechanism by the researcher community as well as by the general public (cf. Meier-Leibnitz, 1989).

(3) Finally, one has to take into account that government and company funds devoted to more applied research exceed by far the public and foundation research funds mentioned so far, which are supposed to serve the basic research activities of higher education researchers. Only by exposing themselves to ever new quality control will the higher education researchers will attract government and company research funds.

Not considering the deviations from the ideal in detail will lead to the conclusion that professional self-control as well as external control of research quality seem to be well established and hence that there is no reason why quality assurance of research should become an issue of public discussion.

For the education function of higher education institutions, however, the situation appears to be somewhat different. As long as education is a by-product of research, educational quality seems to be guaranteed by the quality of research. However, with higher education entering the [ ]education, with an increasing public expectation directed towards higher education [ ] professional and vocational education and with the programs to be shaped equally by the development of disciplinary knowledge and by labor market requirements, the quality of higher education deserves separate and special attention.

One might ask a question about the research function of higher education: is the audience interested and competent to judge upon the quality of the educational services of higher education institutions, and does this audience the sanctions and rewards needed to influence educational services?

Without any doubt, the triangle of clients (i.e., students, their parents and employers), peers of the discipline (i.e., colleagues, the profession), and the society represented by the government is to be identified as the audience interested in higher education quality (cf. Frazer, 1991). Governments in most cases do not base their allocation decisions on the quality of education (usually as a result of missing quality criteria and quality evaluation competence). Employers, once they need higher education graduates and cannot shift their



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demand to other tertiary or vocational education sectors, are bound to higher education whatever the educational outcomes of the institutions are. Students, if demand exceeds available student places, have no choice among institutions. The peers in the discipline have no reason to judge their colleagues' teaching, as long as their self-conception implies their role as researcher more than their role as teacher.

To conclude with regard to the educational services of higher education institutions, an audience does not exist that combines the power, competence, and interest to care about quality. No wonder there is some concern about how and whether quality in higher education may be ensured.

What is Quality? What is Quality Assurance?

Referring to the fact that higher education provides "products" or services for an audience, it seems to be self-evident that these services have to meet the values, expectations and goals of this audience as well as the values and goals of the service providers.

Quality is connected to the achievement of goals, values, and expectations, matching the goals of service providers with those of customers. As mentioned earlier the stakeholders in higher education are represented by the government, while the students, their parents, and the employers are the primary clients and the peers; the latter are "located" on both sides, as service providers and beneficiaries.

Three aspects of quality can be distinguished:

The characteristics and specifications of the product or service as such have to achieve the goals of the stakeholders.

Each of the product or service units being delivered by the organization under review (i.e., the higher education institution) should meet the quality standards according to the general characteristics and specifications once defined.

The quality of products and services has static and dynamic dimensions. The quality of products and services implies their continuous adjustment to changing goals, values, and expectations.

What is true for quality applies to quality assurance as well.

Quality assurance has three dimensions:

(1) Quality assurance implies the identification of characteristics and specification of the product or service in such a way as to meet the values, goals, and expectations of the relevant clientele.

(2) Qu[illegible]rance also means monitoring (to control) or ensuring a standard. Quality [illegible]ds, once identified for the product or service in general, are fulfilled [illegible]uously by each of the individual products or service units delivered.

(3) Quality assurance finally requires a continuous adjustment of products and services to the changing values, goals, and expectations of the stakeholders.

## Alternative Quality Assurance Mechanisms

Quality assurance in higher education seems to reflect only one facet of a general organizational problem, i.e., the "problem of achieving cooperation among individuals who hold partially divergent objectives," per Ouchi (Ouchi, 1979, p. 845, cf. for the following section Frackmann, 1991). It is useful to review Ouchi's framework for "organization control mechanisms."

Ouchi raises the question: "What are the mechanisms through which an organization can be managed so that it moves towards its objectives?" (ibid., p. 833), and he identifies two different mechanisms (ibid., p. 845):

> the market mechanism, in which external forces in a competitive environment (i.e., the consumers) take over the function of evaluating the organization's goal achievement and product quality.
>
> the bureaucratic mechanism, in which rules are explicitly set and monitored, either by a system of hierarchical superiors or by functionally separated "quality control units." Monitoring takes place on the basis of pre-defined "rules." "These may be rules concerning processes to be completed or rules which specify standards of output or quality" (ibid., p. 835).

With regard to quality assurance, one might easily identify two pairs of alternative mechanisms which should assist in providing a broader perspective of what is dealt with in this context of quality assurance and of what Ouchi conceives as organizational coordination alternatives. It is suggested here that one refer to the distinction between internal and external mechanisms on the one hand and implicit and explicit mechanisms on the other. This distinction will guide the course of remainder of this paper.

Implicit versus explicit control mechanisms. Goals and standards to be achieved or to be the basis for the monitoring of goal achievement might be defined explicitly. Goal achievement and the assurance of quality standards might be monitored explicitly and a posteriori. Explicit quality control always implies setting rules a priori and a "bureaucracy"



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that checks reality against the pre-defined standards a posteriori. Bureaucratic mechanisms separate additional steps within the "production process." As a result, bureaucracy interferes with the flexibility of adjustments to changing consumer requirements. Implicit control mechanisms are less visible than explicit mechanisms. They are not characterized by separate organizational control units into the process of production or consumption. Ouchi's clan mechanism and market mechanism are identified as implicit organizational control mechanisms.

Internal versus external control mechanisms. An organization delivers its products or services to an external environment. Whether an organization wishes to or not, the quality of its products and services is monitored externally, either by the consumer market or, in the absence of market mechanisms, by a bureaucracy having the task of ensuring minimal quality standards. An organization might not wait and see that external "sanctions" endanger the organization's survival, but it will instead try to identify the consumer's requirements in advance and make them guidelines for internal quality definition and quality assurance mechanisms. These internal mechanisms might either follow the explicit bureaucratic model or the more implicit one. The distinction between internal and external mechanisms, of course, depends on how the organization's or system's boundaries are defined or perceived.

If we use the internal-external and the implicit-explicit distinction as headers for the columns and rows of a matrix, we can identify the following in regard to Ouchi:

the clan/profession/culture mechanism as being positions within the internal/implicit cell. Quality assurance mechanisms identified as internal and implicit are not visible to an external audience. Quality and quality assurance in this sense are not only based on the commitment of the clan or profession members, but also seems to be built on the external audience's confidence in these internal invisible mechanisms.

the market mechanism as being located within the external/implicit cell. Quality assurance within the market mechanism still is not based on clearly-defined and visible quality criteria but rather on the aggregate of the individual's judgment and choice.

the bureaucracy mechanism as belonging to both the internal/explicit and the external/explicit cell. The internal explicit model still relies on the peers' judgment and criteria but implies less confidence in invisible mechanisms as it makes quality assurance more apparent for external stakeholders. The external bureaucracy is perhaps the most alien in the research university tradition, which has been based on the belief that only peers (internal audience) are able to judge higher education and research quality.

FIGU ALTERNATIVE QUALITY ASSURANCE MECHANISMS

| | Implicit | Explicit |
|---|---|---|
| Internal | Clan<br>Profession<br>Culture | Internal<br>Bureaucracy |
| External | Market | External<br>Bureaucracy |

This framework of quality assurance mechanisms seems to be very useful as a foundation of further comparative research. The remainder of this paper will be devoted to further elaborations on this matrix. Some of the most common concepts to be found in the literature on quality assurance will be analyzed specifically while the management and governance of higher education will be examined more generally.

Six concepts or pairs of concepts will be reviewed based on the internal/external and implicit/explicit framework:

self-regulation and external steering

evaluation for improvement or for accountability

the role of evaluation criteria

peer review and performance indicators

the role of in[illegible]ess and output-criteria

funding higher educ[illegible]uality assessment



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Self-Regulation and External Steering of Higher Education

Quality assurance might be considered as only one, although very important, organizational control mechanism by which higher education is integrated into the societal context as a whole. The more general conceptualization of this higher education policy problem often appears in the form of the self-regulation/external steering dichotomy.

The classical model of higher education policy is again the implicit/internal self-regulation model that relies on the confidence in either the individual researcher's intrinsic motivation or in the institutional "ability" for self-regulation. The opposite alternative of higher education policy seems to be government planning as a form of external decision making on higher education. Governments, however, are wise enough to accept their limitations in judging research and education and often rely either on market mechanisms or peer judgment. The role of peers in the steering of the higher education system might be regarded as external but implicit mechanisms, as peer-panels usually not part of the organizational unit under review, and as criteria for discussions based on peer review processes usually not made explicit. Peers may also be regarded as still internal, considering the fact that they still belong to the respective academic community. Their reviewing endeavor may also be identified as explicit, taking into account the fact that the peer-panel always appears to be a separate and visible "unit" of quality assessment.

Figure 2 uses the framework previously introduced, while positioning the alternative steering models in higher education.

FIGURE 2: ALTERNATIVE STEERING MODELS IN HIGHER EDUCATION

| | Implicit | Explicit |
|---|---|---|
| Internal | Self-Regulation | Peers |
| External | Market<br>Peers | Government |

Evaluation for Accountability or for Improvement

In contrast to express a moderate reluctance against evaluation in higher education, the higher education community often stresses the claim that evaluation should primarily serve the purpose of accountability. Some doubts might arise about the adequacy of this conceptualization of alternative purposes.

Evaluation might be conceived as a "collecting" of information on the strengths and weaknesses of a product or service, i.e., on its quality. The question arises about the other purposes of this information; should it be collected for the:

> monitoring of whether the product or service meets the expectations, values, and goals of the relevant clientele,
>
> monitoring of whether the individual products and services continuously meet these quality standards,
>
> monitoring of whether products or services have to be adjusted to changing values, expectations, and goals,

are the major aims of evaluation. Thus the main reason for evaluation is maintaining and adjusting, i.e., improving quality.

Accountability might be conceived of as delivering the information of the evaluation process, mandatorily or as a result of a certain pressure, to external agencies. What else would external agencies such as the government or the customers of higher education use the evaluation results for than to relate their decisions and choices concerning higher education? The information, if appropriately used within the decision-making processes, might induce adjustment or improvement of higher education quality on its turn.

The underlying distinction of the widely discussed alternative between evaluation for accountability and evaluation for improvement thus has been identified as a distinction between evaluation being used to induce internal processes of adjustment and improvement or to induce external agencies to seek adjustment and improvement via sanctions or rewards. It is a question of ownership of the once-investigated information on the strengths and weaknesses of higher education performances. In our matrix a distinction is made along the internal/external dime



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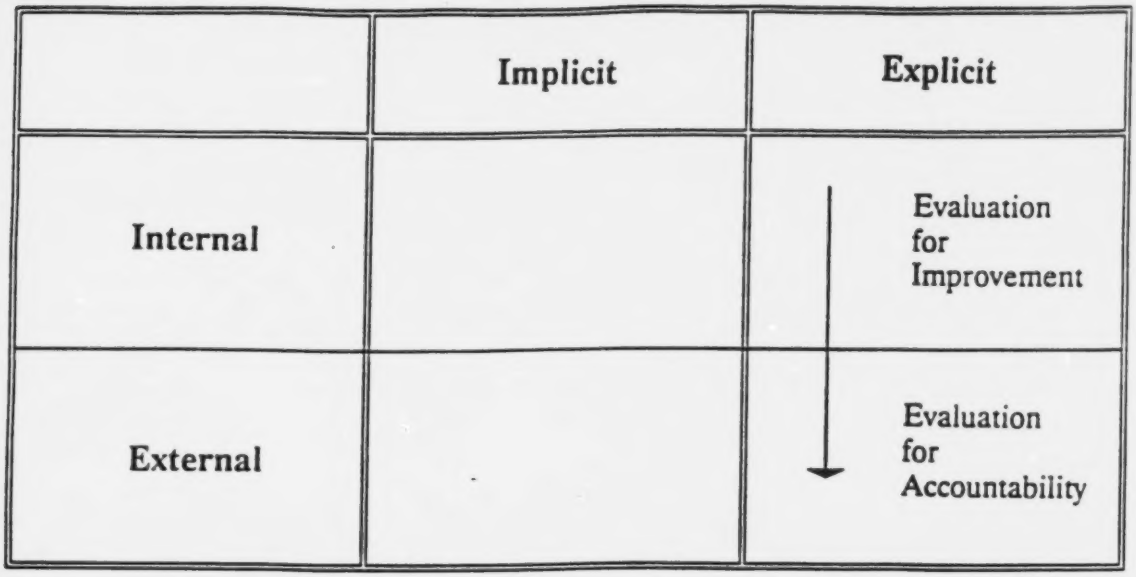
FIGURE 3: EVALUATION FOR IMPROVEMENT OR FOR ACCOUNTABIL Y




Criteria in Explicit Evaluation Processes

In many countries and their higher education systems, procedures have been established for explicit quality evaluation. Explicit quality assurance was defined earlier in this paper as a separate step in the "production process," most often undertaken by separate organizational units. Explicit evaluations also imply certain criteria. The different role and the criteria used within different approaches of explicit quality assurance processes are the foci of this paragraph.

(1) The weakest form of criteria used in quality assurance processes is within-institution quality control and improvement efforts. These efforts are made visible and communicated to the public, but quality control criteria are not made explicit. Taking into account that higher education not only has to achieve internal but also external goals, this kind of quality assurance seems to be based on public confidence in the institution's quality to consider these external goals and criteria. This is the form of quality assurance expected by German governments (e.g. the government of the Land Nordrhein-Westfalen) from their institutions.

(2) To guarantee some "externality" within the quality assessment the process might be based not only on internal peers but on peers from the academic community in general (external peers). Still, goals and criteria along which achievements are judged, are not visible and remain more or less internal to the academic community. The main emphasis of external scrutiny seems to be the approach of the Dutch VSNU program review efforts.

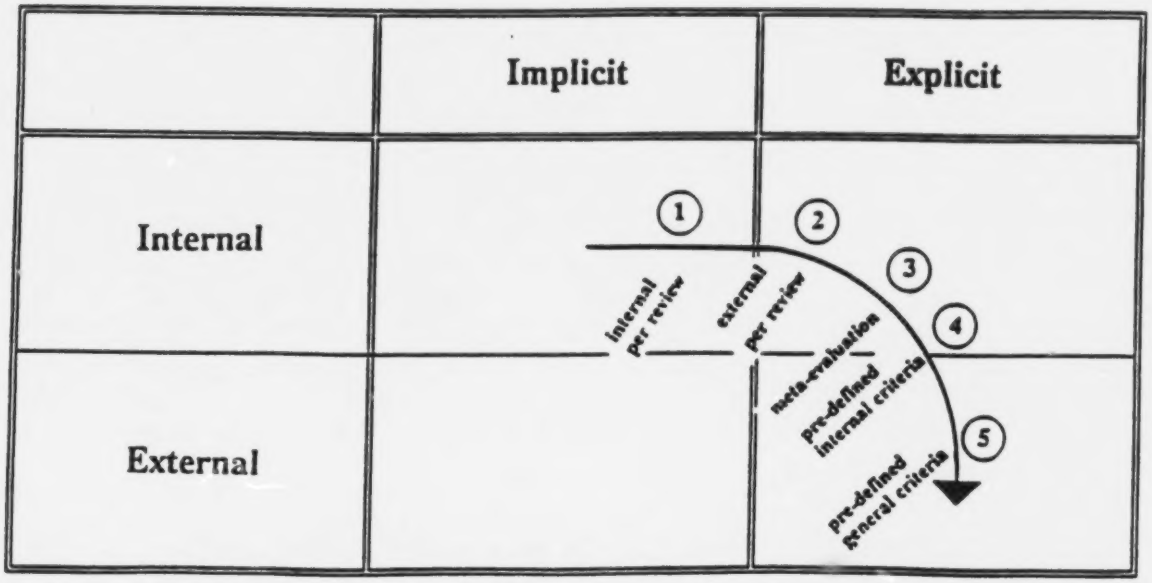
(3) ...al agencies or stakeholders might have some doubts about whether the ... criteria for quality are applied and whether the process of evaluation ...ality assurance is undertaken appropriately and in a reliable manner, ...ing to a certain set of generally applicable standards. As a consequence ...ese doubts, the approach of meta-evaluation is being implemented, i.e. ...aluation of the evaluation processes. This endeavor may be undertaken by the peers of the academic community (such as the Academic Audit Unit in the British university system) or even by a governmental agency (such as the Inspectorate in the Netherlands).

(4) The next point on the "continuum of criteria use" in explicit evaluation processes is marked by the explicit use of pre-defined criteria. Quality as mentioned earlier always has something to do with goals and with achievement of these goals. The evaluation we have in mind here focuses on the congruence of previously-stated purposes with educational outcomes. This means that the goals and quality standards of the unit under review (institution, department or program) are taken for granted and as a basis for evaluation. This kind of evaluation approach is being followed by the American accreditation ...

(5) The final approach to be mentioned here is the one where predefined and generally applicable criteria form the basis of explicit quality control conducted by external agencies. This might be the underlying rationale for the "contractual financing" of higher education.

When these alternatives to quality evaluation approaches distinguish criteria we followed a line in our matrix from the ...rnal/implicit cell to the external/explicit cell.

FIGURE 4: ALTERNATIVE ... CRITERIA IN EXPLICIT QUALITY ASSURANCE PROCESSES

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Peer Review and Performance Indicators

Performance indicators and peer reviews are regarded in the literature as very crucial opponents of quality assurance or quality assessment higher education. We will try to determine which of the dimensions of our matrix we might use to explain the difference between these two approaches for higher education.

With peer review it is always difficult to grasp the underlying criteria of evaluation. The basis of peer judgment always remains somewhat invisible. Even external peers (i.e., peer groups that do not belong to the unit under review) apply the means of peer review in which criteria remain implicit. Performance indicators do not necessarily follow a totally different approach from peer reviews. There are performance indicators representing nothing but quantified peer review results. The use of research unit rating in UFC funding mechanisms in the U.K. and bibliometric methods based on citation or publication counts in refereed journals basically are peer review results. However, performance indicators that reflect the quality of educational outcomes are quite different from the ones mentioned so far, in that they take into account external judgment on the institutions' quality of the educational functions. Performance indicators showing the employability of graduates are based on external criteria and external judgment. Thus the more important distinction that goes beyond the distinction between peer review and performance indicators is the one between internal and external criteria used to assess the quality of higher education.

In our matrix, while describing the different species of peer review and performance indicators, we followed a line from the internal/implicit cell to the external/explicit cell.

FIGURE 5: PEER REVIEW AND PERFORMANCE INDICATORS

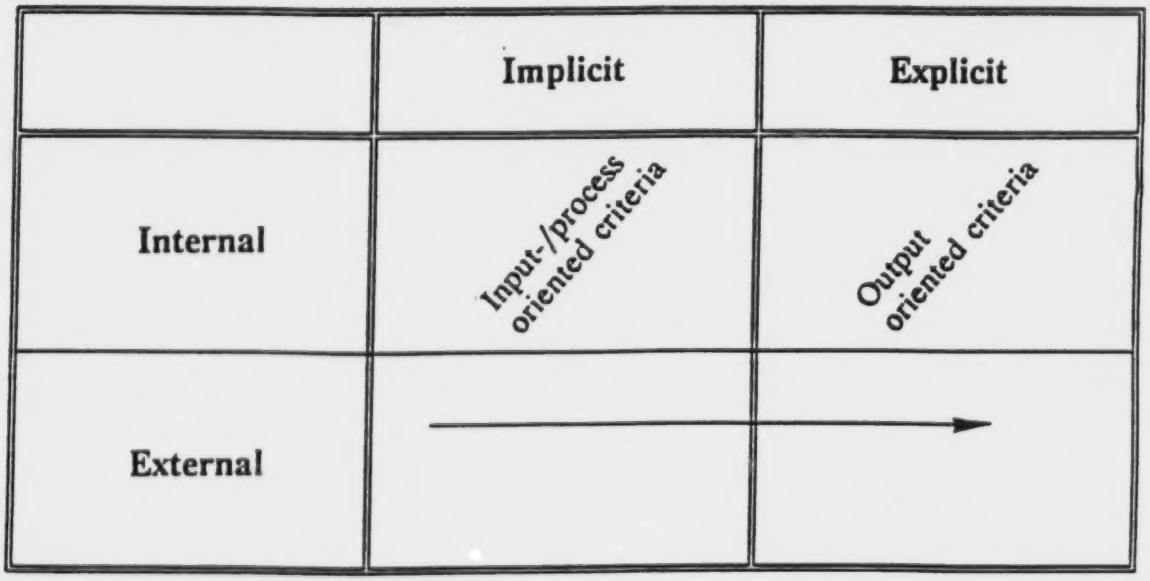
| | Implicit | Explicit |
|---|---|---|
| Internal | Internal Peer Review | |
| External | External Peer Review<br><br>P.I. based on Peer Review | P.I. based on external criteria |

Input-, Process- Output-oriented Quality Assurance Mechanisms

Let us assume once more the case of explicit quality assurance mechanisms in which criteria are used. Certainly higher education has to deliver services to an external clientele. The evaluation of higher education quality might be restricted to the evaluation of the input and the process of higher education performances. This might be based on a confidence in higher education, believing that the "adequate" output will be produced if only the prerequisites for this output are ensured. Output criteria in this community require explicit output criteria, whereas the alternative mode of evaluation focuses on educational outcomes.

This distinction between input- and process-oriented quality assurance on the one hand and output-oriented quality assurance on the other is located in our matrix along the implicit/explicit dimension.

FIGURE 6: INPUT-, PROCESS- AND OUTPUT-ORIENTED QUALITY ASSURANCE




Funding Higher Education and Quality Assessment

With regard to funding, higher education is totally dependent on external stakeholders or agencies. Whether members in the higher education community like it or not, quality always plays a certain role in funding. Funding relies heavily on higher education's meeting the goals, values, and expectations of the funders or those represented by the funders, or in modifying external expectations in favor of its own goals and values.

Two manifestations are imaginable in which quality criteria play a role in funding higher



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education. The more implicit one is either the market mechanism or funding based on negotiations. With the market mechanism, quality criteria remain implicit. Funding is the aggregate result of many quality-based individual decisions. Negotiations between higher education institutions and government often do not reveal quality criteria very clearly either. The more explicit funding mechanism is the one based on quality-oriented performance indicators. Funding criteria in this case must be well understood by both the funding agency and the fund recipients. In between these two alternatives one might locate the funding based on peer review, and the results of peer review being transformed into performance indicators (cf. the UFC ratings).

In our matrix the funding alternatives based on quality assessment are to be differentiated along the implicit/explicit dimension.

FIGURE 7: ALTERNATIVE FUNDING MECHANISMS BASED ON QUALITY ASSESSMENT

| | Implicit | Explicit |
|---|---|---|
| Internal | | |
| External | Market<br>Negotiations | P.I. based<br>funding |

## Conclusions

Quality seems to be a broad concept related not only to the achievement of the higher education community but also to the goals, values, and expectations of external stakeholders. The quality of higher education is dealt with not only in quality assurance processes but also in more general issues like steering and funding of higher education.

The ...f this paper was to provide a framework for clarifying alternative concepts of ...ssurance and related mechanisms that are currently being discussed, analyzed in ...ature, or occurring in reality.

Wit... ...stinction between internal and external mechanisms on the one hand and explicit and ...cit mechanisms on the other, it seems indeed to be possible to explain the main alternatives identified in the quality assurance discussion, such as evaluation for accountability or improvement, peer review and performance indicators, and the use of input-, process- and output criteria. A comparative analysis is still needed of the implementation of these alternative approaches in the higher education context.

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# Questions of Quality in UK Higher Education

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## The Quality Agenda: Higher Education in Britain

Britain has recently and aptly been described as "slouching towards a mass system" of higher education. The traditional dominance of the universities has been broken, at least in terms of student numbers, by the rapid expansion during the 1970s and 1980s of the polytechnics and other colleges. These two kinds of institutions now account for over half of all students.

The participation rate in the UK is around 15 percent. Despite the variety of institutional types there is, by international standards, remarkable homogeneity in the educational product. The three- or four-year bachelor's degree predominates in virtually all institutions. Certainly there has been considerable curricular innovation in the polytechnics but it has been within the largely consensual framework provided by the academic purposes and standards of the bachelor's degree.

The maintenance of broadly comparable academic standards across the entire system may be one reason why it is only 'slouching' towards being a mass system. Many commentators have noted Britain's slowness in moving from elite forms, not just in higher education. In higher education, as Martin Trow and others have convincingly argued, the setting up of the council for National Academic Awards in the mid-1960s to oversee academic standards in the new polytechnics with explicit reference to standards in the universities, was primarily responsible for the preservation of the 'gold standard' of the bachelor's degree across the entire system.

More recently the slogan, "fitness for purpose" and the growing importance attached to institutional mission statements have introduced a greater differentiation into the system, at least at the level of rhetoric and marketing. However, the assumption of broad comparability of standards is maintained.

## Measuring and Assuring Quality

Is comparability of standards actually achieved? Higher education, like most public

services, ... n onto the defensive during the Thatcher administration. It was bombarde... rformance indicators and other efficiency measures and the autonomy and self-regula... nigher education professionals were increasingly challenged.

The ...tical imperative towards quality assessment has taken two main forms. First, repeated fun...g reductions posed the question, "what should be cut "? Part of the answer was the cutting of the low quality and the preservation of the high. The problem was how to distinguish between the two.1 Attempts have been made to measure quality and to rank institutions in terms of a mixture of performance indicators (such as research productivity) and judgments of academic peers or government inspectors.

The second form of imperative came from an evident skepticism among members of the Thatcher government and its supporters about the standards current throughout the entire public education system coupled with the conviction that "something must be done about them." The academ... world was forced onto the defensive in relation to its central value, the maintenance and enhancement of standards. Questions of actually <u>how</u> institutions assured the quality of their work were voiced increasingly. At the end of 1990, the traditionally autonomous universities created under the umbrella of the Committee of Vice-Chancellors and Principals, a national A... ...nic Audit Unit whose purpose was to ask this question of individual universities.

The assessment of quality in British higher education needs to be seen along a number of dimensions. These are summarized in the following diagram:

<u>Quality Assessment in UK Higher Education</u>

| <u>Quality Measurement</u> | <u>Quality Assurance</u> |
|---|---|
| Performance indicators | Peer judgments |
| Institutional rankings | Comparability of standards |
| Differential funding | Public accountability |
| (External/governmental) | (Internal/institutional) |

Thus, qua... ...surement involving the use of performance indicators has been used primarily by gov... ...agents to make funding allocations. Quality assurance, with a much greater emph... ...judgments made within the academic community, has been used by higher education ins... ...ns to satisfy the growing demand for public accountability over quality and standards. National and institutional procedures and methodologies for assessing quality have been devised that focus variously on institutions,



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academic programs, staff, and students. It seems that everything is being assessed by everyone.

New Policies for the 1990s

In May 1991, the British Government published a White Paper in which major changes were proposed to the higher education system, the most notable being the dismantling of the binary division between the universities and the polytechnics which has been a central figure of the system since the end of the 1960s. A single funding council, university titles, and full academic autonomy for the polytechnics are central features of the proposed new system. A higher education system will thus be created that is characterized by expansion, diversity, innovation, and high quality.

Considerable attention is devoted in the White Paper to the issue of quality. The assurance of quality is regarded as a matter for higher education institutions themselves with a Quality Audit Unit, owned collectively by the institutions, responsible for the audit of the quality assurance procedures of individual institutions. But in addition the funding councils for England, Scotland and Wales will each establish Quality Assessment Units. These will assess quality for funding purposes and will inform the public, particularly students and employers, about the relative quality of institutions and the overall quality of the system. Legislation is scheduled for the end of 2001. How the Audit and Assessments Units will set about their respective businesses is far from clear.

Descriptions of two very different research projects into the assessment of quality comprise the remainder of this paper. The first project examines the development of a quantitative performance indicator of student 'value added'. The second is an attempt to compare quality across the higher education systems of different countries using primarily the qualitative measures of peer judgments. The first is an example of quality measurement, the second of quality assurance. The conclusion questions the separability of the two.

Value Added

Early in 1990, the CNAA was asked by the Polytechnics and Colleges Funding Council (PCFC)

> to test different approaches to the measurement of value added, and . . . determine a methodology for the calculation of value added, based on a comparison of entry and exit qualifications relevant to the operational needs of the PCFC and higher education institutions.

The work was commissioned to support the deliberations of a PCFC Committee on Performance Indicators. The briefing paper stemming from these deliberations was to provide advice on the use of performance indicators by the PCFC and institutions,

respectively, i[illegible]olicy- making and planning processes and to suggest a range of performance in[illegible]s that might be used to evaluate aspects of institutional performance.

The [illegible]ct brief implied a relatively narrow conception of value added: essentially a mea[illegible]e of student achievement which took into account the effects of differential studen[illegible]nputs (i.e., entry qualifications). The honors classification of student achievements on the bachelor's degree and the supposed comparability of standards across the system provided a largely credible output measure (one that was not wholly uncontested, however, along with its supporting assumptions). The generally lower entry qualifications of polytechnic and college students, when compared with those of their university counterparts, needed to be taken into account in evaluating institutional performance in relation to student achievements.

Several metho[illegible] value added in terms of the relationship between entry and exit qualific[illegible]eveloped in the UK. Their problem was that they were based on arbitra[illegible]ssumptions about this relationship. Indeed, as the project was to show, they generally gave too much weight to entry qualifications so that a high value added score was unduly determined by low entry qualifications.

The comparative value added measure (CVA) developed by the project avoided this difficulty by using the actual relationship between entry and exit qualifications, as indicated by national data held by the CNAA, as the base against which an expected value added score could be calculated for an individual institution or any sub-group of students.

The CVA compares the exit results expected for students with particular entry qualifications with their actual exit qualifications. It allows an assessment of a course's progress and success given its [illegible] entry profile. The method can also reveal whether apparent overall success co[illegible]relative failure for students with certain entry qualifications.

The report of the project (The Measurement of Value Added in Higher Education, PCFC/CNNA, London, 1990) has aroused considerable interest. The CVA appears to have attained a credibility--at least in the research community--which no other value added method has achieved. Politically and institutionally, however, the response has been more mixed. Precisely because it is based on non-arbitrary assumptions, it is less open to manipulation for particular purposes.

International Comparison of Quality

The second project is currently being undertaken by the CNAA Quality Support Group in collaboration with the Center for Higher Education Policy Studies in the Netherlands and the Hochschul Information System in Germany. Its aim is to assess the possibility of making valid and reliable comparisons of the quality of higher education in several European countries.



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The rationale for the project is found largely in the imminent arrival of the single European market and the consequent increase in the mobility of skilled labor and of students. These pose issues of comparability among the courses, institutions, and graduates of the various national systems of higher education.

The approach to the assessment of quality being adopted by this study is one of peer group review. The aim is not to rank either institutions or systems. Because quality must be related to system or institutional goals, international comparisons of quality cannot be hierarchical but should be descriptive of the different facets of quality and standards to be found in different countries.

The study is currently in its pilot phase. This has two stages: (i) the collection and analysis of descriptive information about systems and courses, and (ii) international peer review of selected courses.

Ten economics programs drawn from the three participating countries were selected for the pilot phase. They provided details of their curriculum, teaching and assessment methods, students and staff. This information was considered by a peer group of nine economists, also drawn from the three participating countries. Discussions also took place with faculty representatives of the ten programs.

The results of the pilot study will be reported in due course. Strengths and weaknesses of the programs from the different countries were identified by the peer group. However, the peer group was more confident in its judgments about the content of programs than about the learning outcomes arising from them. If the aim is to compare the qualities of graduates rather than the qualities of study programs, then a complex range of input and environmental factors needs to be given greater consideration.

Extension of the work to cover other study programs and to induce other countries is being considered.

Some Conclusions

These contrasting examples of research projects on quality assessment being undertaken by the CNAA Quality Support Group indicate the range of questions being posed under the quality agenda. Although they support the distinction made earlier between quality measurement and quality assurance (the former using performance indicators to make funding allocations, the latter using peer judgments to meet public accountability for standards), such a distinction is in practice very blurred.

The conclusion of the value added report--and other reports on the use of performance indicators--was that such indicators could aid but should not replace peer judgments. The international peer review of economics will make use of considerable amounts of quantitative and other performance data as a basis for judgment and evaluation.

The point can further be illustrated by the tendency--in the UK at least--to convert qualitative judgments about teaching or research into quantitative indicators or rankings to support funding allocations.

# Conceptualization of College Quality

Jeffery Gilmore[1]
U.S. Department of Education

## Introduction

The purpose of this conference is to develop an agenda for international comparative research in the areas of accreditation, self-study and assessment, programmatic and curricular review, assessment of student learning, and math and science teaching and learning. The ultimate goal of these endeavors is the development of comparative measurements of quality in postsecondary education that will endure under the light of international examination. While this lofty goal is one that I wholeheartedly support, I am somewhat concerned that we may be starting from several different conceptions of what is meant by quality. In fact, I am aware that addressing quality issues from a variety of perspectives may be exactly what the conference organizers had in mind and that a "Tower of Babel" approach may be precisely what is needed to cut through our paradigmatic and cultural blinders and gain enlightenment. However, lest we wish to fall victim to the same fate as those infamous citizens of Shinar so long ago, I offer up these humble thoughts on conceptualizations of college quality.

## Measuring Educational Quality

One of the most persistent problems facing colleges and universities has been the difficulty of measuring and explaining educational quality. There are at least four general approaches to the definition of institutional quality: by outcomes, value-added, resources, reputation and selectivity, or by some combination of these[2] Even where there is agreement on defining quality, great obstacles remain to measuring it, in part because many attributes are not easily quantifiable, and in part because quality, like value and worth, are largely "in the eyes of the beholder."

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[1]This paper was prepared by Jeffery Gilmore in his private capacity. The views are those of the author and no official support by the U.S. Department of Education is intended or should be inferred.

[2]Alexander W. Astin, "Why Not Try Some New Ways of Measuring Quality?" Education Record 63(2): 10-15 (1982).

Quality. The most common and time-honored approach is to assess educational quality on the basis of institutional resources. In economic terms, the "inputs" to the system have defined quality. The inputs into an educational institution, though complex, are the easiest to measure as they are most often expressed in quantitative terms. Inputs include such resources as capital, labor, and equipment. Using this approach, educational quality is defined in terms of faculty salaries, the number of faculty with Ph.D.s, faculty-student ratio, library volumes, the size of institutional endowments, the square footage or value of the physical plant, and the like. A complicating consideration in the measurement of inputs are inputs other than those measured by costs, including the personal attributes of students, faculty, and staff. These include student ability and effort, faculty energy and expertise, and staff commitment and skill, to name but a few. Intangible institutional inputs include environmental synergies and cultures that motivate and facilitate educational outcomes. Also not to be discounted are family and community support, encouragement, and expectations of success. These inputs contribute to the educational enterprise. They also make the measurement of quality a very complex undertaking.

Reputation and Selectivity. Another approach has been to measure educational quality on the basis of institutional reputation and selectivity. Together with the documentation of resources and the prices charged for tuition, institutional reputation and selectivity form the grist of the many rankings of quality found in popular magazines and college guide books. Parents and prospective students easily grab onto this information and note the wide ranges in average freshman Scholastic Aptitude Test scores (in 1987 they ranged from 800 to 1,440), tuition charges (from $3,991 to $11,880 for private colleges), and acceptance rates (from 15% to 98%). Many colleges stake their future on these scores and rankings, and families often make critical educational decisions on them as well. However, measuring educational quality and value is much more complex than those comparisons of tuition charges, average SAT scores, acceptance rates, and other components of an institution's reputation.

Quality of Outcomes and Products. More recently, the measurement of institutional quality has focused on institutional outputs or educational "products." Measuring outputs is problematical. First, there are three major functions of higher education--teaching, research, and public service--and each has a different set of products. Moreover, the matter of what constitutes a "product" of higher education is in some disagreement. Some view it as learning in all its manifestations, including knowledge creation, transmittal, and preservation, and changes in people's knowledge, characteristics, and behavior. Others focus on such tangible "goods and services" as credit hours, degrees, publications, discoveries, and public contact hours. Still others consider outputs to be synonymous with such short- and long-term outcomes of education as increased lifetime earnings and job status. An additional difficulty in measuring the quality of educational products in higher education is that different types of colleges and universities have missions that emphasize the teaching, research, and public service functions to varying degrees. Diverse missions make comparisons of



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outputs among institutions problematical, if not insupportable.

A promising outgrowth of this new tradition has been the recent explosion of interest in the assessment of student outcomes resulting from the educational experience. Using this approach, the measurement of quality might include an assessment of content learning in the disciplines (theories, methods, and knowledge) or the development of specified cognitive skills (such as critical and analytic thinking, the ability to synthesize material and ideas, and the ability to draw and defend conclusions). Quality measurement might also include an evaluation of student growth resulting from the educational experience (including moral, physical, social, psychological, aesthetic, and emotional development). Or, quality might be revealed through an assessment of student outcomes, both direct and indirect, resulting from the collegiate experience (including degree attainment, further education, employment, lifetime earnings, socioeconomic status, civic involvement, personal lifestyles, and satisfaction with life).

Return-on-Investment and a Value-Added Approach. Enthusiasm for the outcomes approach outlined above and the large number of studies that have attempted to evaluate the consequences and performance of education must be tempered by two important considerations: the investments made in education (including money, time, and effort), and the differential abilities and backgrounds of students entering college. The investment-in-education consideration comes from human capital theory--the idea that investing in people's personal development will reap social as well as individual rewards such as better citizenship and higher levels of production in the workplace. Studies have measured the effects of education on such things as job satisfaction, personal health, political socialization, criminal behavior, marriage and divorce, the ability to perform complicated tasks and adopt to changing conditions, economic growth, lifetime earnings, and occupational distributions. However, past studies that have focused solely on outcomes have several shortcomings in the assessment of educational quality. First, researchers must be sure not to limit analyses to quantitative outcomes that give no information about qualitative effects. Second, studies must disaggregate data by institution attended since it is reasonable to expect that the economic, social, and political impacts of the educational experience vary considerably depending on the particular institutional setting[3]. Third, outcome studies must control for students' native ability and other personal background factors. Education alone may or may not make people more productive workers or better citizens. Fourth, labor market conditions can also affect graduates' earnings.

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[3]Morton Owen Schapiro, "The Concept of Productivity as Applied to U.S. Higher Education," paper prepared under contract to the U.S. Department of Education for presentation at an Organization for Economic Cooperation and Development (OECD) conference on "The Concept of Productivity in Institutions of Higher Education," May 25-27, 1987.

An alternative hypothesis for why higher wages are often associated with higher levels of educational attainment, or why one institution's graduates do better than another's, is that education serves as a screening system for society. That is, one principal function of education is to screen for individuals with the greatest motivation and innate ability. Students not only vary considerably in their academic ability and potential at the time of matriculation, but, and more to the point, different colleges attract and recruit different types of students with respect to student intellectual disposition, emotional temperament, motivations, attitudes, values, goals, educability, openness to change, and potentialities for development. Various studies over the years have well documented the differences in student characteristics and the fact that these differences vary considerably, not only among students within an institution, but, more importantly, between institutions to a significant degree. Colleges, through the admissions process, identify only the best academically prepared students, and institutions with the highest selectivity requirements have the best students. Differences in lifetime earnings and other outcomes may, therefore, reflect the fact that colleges merely identify the more talented students rather than increase their skills. The "better" colleges may not provide a better education but rather, may serve to identify and then "certify" the better students. Thus, a refinement of the outcomes approach to the assessment of quality incorporates a consideration of the "value-added" by the educational experience.

## Conclusion

The quality of undergraduate education is an issue that promises to be highly visible for some years to come. As we move aggressively to assess student educational outcomes, we need to work from a research-based conceptual framework that helps us to frame the right questions and interpret the results of our efforts. I hope that consideration of the conceptual approaches to measuring institutional quality presented above will be helpful. I also hope that, in our rush toward universal assessments and institutional accountability standards, we don't extinguish the distinctiveness and variety of educational missions pursued by our nation's colleges and universities. That would be a tragedy indeed.



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# Taxonomy and Comparison of Approaches to Quality Assurance in Higher Education

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Let us define quality assurance (QA) in higher education (HE) as mechanisms and/or processes designed to ensure that degree courses are of an appropriate quality, that is, that the programs, admission levels, context, and resources (human and material) of the courses are such that graduates are likely to achieve certain standards in terms of knowledge, skills, understanding, and abilities.

It is assumed that the QA mechanism also will permit some sort of objective statement about this quality in relation to other institutions.

In some countries (such as the UK, Australia), some institutions (universities) have been totally responsible for their own quality assurance (internal assurance) while others (polytechnics, institutes, etc.) have been subject to external quality assurance processes. This simple (if unequal) situation is now changing rapidly, and not in one consistent direction. Some institutes are being given more independence, for example, whereas some universities are being subject to more external control.

One reads monthly about a country's establishment of a body charged with ensuring the quality of its higher education. Naturally, there are many different approaches to this task, and a question that typically arises relates to the efficacy of the various approaches. Presumably not all methods are equally good, and it would be useful to be able to determine which approaches to QA are best, although this immediately requires a definition of "best." We are speaking, of course, of the quality of quality assurance bodies.

## Stage 1: Taxonomy

To focus our thinking, we may attempt to identify and categorize the various types of approach. The following is an initial, three-dimensional, proposal for such a categorization.

D1. T y

1. nent department
2. S ry body
3. Voluntary association
4. Tertiary institution (whether responsible for its own quality only, or for that of some other institutions also)

It may be that professional societies should be included here.

D2. Scope

1. A single course/degree/ m
2. A whole disci or across institutions)
3. Faculty/school
4. Whole institution

D3. Authority

1. External, with 'teeth' } To the institution
2. External, advisory }
3. Internal }

Stage 2: Classification

There are certainly examples of all of these (11 or 12) divisions. Further investigation would reveal whether there are instances of all of the 4 (or 5) x 4 x 3 = 48 (or 60) cells of the three-dimensional array, whether categories have been omitted, and whether categories can be combined (e.g., on the grounds that their effects are the same).

The task at this stage would be to identify as many QA bodies as possible, slot them into the cells, and revise the taxonomy as proves to be necessary. Prima facie, the distinctions being made in this taxonomy appear to be real ones, and it may be that the QA bodies in any one cell perform similarly, with similar effect.



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Stage 3: Definition of Effectiveness

At this stage, choose a sample of the QA bodies identified, selecting no more than one from each cell. Its method of operation should be investigated through reference to its stated procedures and objectives and at least one entity (from dimension D2) for which it is responsible. It is clear that the effectiveness of a QA body must relate to the quality of the entities in its ambit. However, using the results of assessing an institution to draw conclusions about the QA body would be quite a difficult process. Furthermore, the activities of a QA body are only one factor in the quality of an entity for which it is responsible. It is necessary at this stage to gain some appreciation of the other factors involved, and their relationship to each other. Conversely the quality of its institutions is only one aspect of the effectiveness of a QA body.

Effectiveness could be related to questions such as 'what does the body do to improve quality for students and staff, and what evidence is there of your success?'; or to questions such as 'when did the body last close down an institution (or faculty or degree course)?' Such contrasts indicate that effectiveness depends on the purpose of the QA activity and who has the power to set the agenda for it. Quality is largely a social construct, which suggests that it is more appropriate to identify the best match between the environment and quality measures than to try to define what is best in an absolute sense.

With this caveat, we may need to address what is almost a second-level taxonomic problem. Having identified what is meant by 'quality' of an entity, can we

i) discard those quality factors that do not derive from or depend on the QA body; and

ii) identify any other desirable features of a QA body that should be incorporated in the definition of its effectiveness?

Stage 4: Evaluation

At this point, we investigate and compare as many QA bodies as possible, to see which are working effectively, in terms of the discussion developed at Stage 3 (acknowledging that context of each QA body must be taken into account). It would be necessary to compare bodies from different cells and also from the same cell. There may be more difference between bodies in one cell than across cells. This would lead one to look for other key differences between bodies.

Conclusion

Which QA bodies are most effective and in what senses is this the case? Which QA approaches in the taxonomy give rise to these effective QA bodies? Clearly there is not global definition of "best." However, it may be possible to see what works where, and why it works, and whether it can be applied elsewhere.

# Using Student Persistence Research to Strengthen the Quality of Teaching and Institutional Processes

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## Introduction: Assessment for Quality

In looking at the higher education scene both in the United States and internationally, many concerned with management and policy often focus more than they intend to on assessment for accountability and comparability. While these purposes inspire competition for excellence, many improvements in higher education are the result of ongoing collaboration among faculty, administrators, and students on a regular basis to identify and respond to concerns regarding quality.

## Themes: Points Toward Improvement

Several points critical to encouraging continuous improvement of quality in teaching are addressed here. First, although assessment for improvement is not a new concept, some of the important dynamics utilized in assessment are fairly new (such as a stronger emphasis on qualitative methods and processing arising from Deming's total quality management [TQM]). Second, sufficient and clear assessment questions and outcomes emanate from a continuous concentration on incorporating multiple perspectives (such as those coming from different academic units, institutions, and cultures). Third, the use of faculty, administrator, and student teams (both separate and integrated) provides the engine upon which the TQM planning, doing, and evaluating and acting cycles related to assessment are accomplished to provide continuous improvement. Fourth, a continuous balance of methods incorporating both quantitative and qualitative data compensates for the inherent weakness of any one method. Finally, if assessment efforts fail to have an impact on decision making, the assessment movement will end.

## Overview: Two Studies in Context

In this paper we examine Syracuse University's activities in the area of internal assessment primarily related to admissions and retention analysis, and contrast this with work being done at the University of Limburg in the Netherlands as represented by the article, "Explaining Differences in Drop-outs Between Faculties in Dutch University Education," authored by Riekele J. Bijleveld (1991) and distributed by the Center for Higher Education Policy Studies (CHEPS) at the University of Twente, the Netherlands. These studies will be placed in the larger context of an increasing range of assessment efforts on the national and



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international levels.

Context: Syracuse University

Syracuse University is a private research and teaching institution founded in 1870. Syracuse sits on the boundary between the east coast and the midwest, two regions with slightly different cultural contexts. Some of the traditions of both midwest land-grant institutions and east coast institutions have developed (see Boyer, 1990, for contrasting traditions in the development of higher education in the United States). The university was originally supported by the Methodist Church and local entrepreneurs of Syracuse who thought the thriving city needed a premier educational institution. It has never been a rich institution, but a hard-working one that is 55 percent dependent upon tuition dollars. Through intensive marketing efforts in the last five years, Syracuse has strengthened its endowment. However, it will never catch up to the fundraising machines of the most elite institutions in the United States. Given its high tuition, Syracuse does have a number of wealthy students (who are both visible and felt), although 65 percent of the student population receives some financial aid. The institution has developed some very strong programs, particularly with the S.I. Newhouse School of Public Communications (primarily at the undergraduate level), and the Maxwell School of Public Affairs and Administration (focused at the graduate level). Many other programs are of average to excellent quality.

In his opening convocation to new students and their parents, the new Chancellor, Kenneth Shaw, described Syracuse as a private institution dedicated to public service. These contrasts are very much a part of this mid-size (large for private universities) and diverse institution.

As it pertains to this presentation, private research institutions in the United States have a unique advantage when building assessment processes for continuous improvement. "Private" means that funding is somewhat independent of government, so Syracuse can forge its own path as it reads the environment and maintain its traditions. "Research" means that Syracuse constantly strives to develop faculty at the cutting edge of their fields. In relation to assessment for continuous improvement of the management of higher education, there is considerable freedom of movement to forge an management research agenda. Faculty have the minds and power to focus on cutting edge issues. They can determine and define their research priorities and foci. This assessment process at Syracuse is part of what makes the university very exciting. Faculty are not caught up in the typical drudgery of producing one report after another to serve various external constituencies, as are those at public institutions in the United States.

The Office of Evaluation and Research at Syracuse University, which supports Campus Studies, is unique because of the nature of the institution. An official Office of Institutional Research (IR) was abolished 15 years ago because the office produced reports deemed sufficiently useful without sufficient consultation with faculty and administrative constituencies. The Office of Evaluation and Research has grown over time to bridge the

gap left [illegible]sence of an IR office. As OER has developed over time it has tried to respond [illegible]formation needs of decision makers. Its work is also closely tied to the academi[illegible] of the institution, as the Office is part of the Center for Instructional Developr[illegible] longstanding center dedicated to the improvement of undergraduate teaching.

Retention: The Bread and Butter Issue

Retention and the study of attendance patterns are the bread and butter issues for higher education because they tie academic programs to resources for the teaching mission of higher education. For the teaching mission, the desired outcome is students graduating with academic and social achievements. The inputs are high quality students, and the resources (in money and faculty) to work with these students.

Retention is an issue that cuts across institutional contexts very effectively--contexts like different countries, cultures, and types of institutions (e.g., public versus private in the U.S.; public versus technical [illegible]ols in britain and other countries). It is the outcome that no one can argue with in te[illegible] of its importance. If the purpose of assessment is to improve programs, it is the clearest indicator of what characteristics of a program work well and what needs to be improved. If the purpose of assessment is to account to external audiences or customers (such as governmental agencies), it is the clearest measure of program impact. All of higher education wants to deliver efficiently as many high quality students to society and to the work force as possible. Some public institutions have too many students and need to design programs that will work with these numbers. Most public institutions do not have control of the resources for educating their students and need to show how quality decreases as student load increases, particularly given depleting faculty and program resources (e.g., Austria has this proble[illegible]ll as many public institutions in the United States, such as the State University of New [illegible]stem). In this era of greater accessibility to higher education, most institutions face the problem of producing high quality graduates despite increases in student diversity and skill levels.

Retention is the ultimate performance indicator for assessment regardless of the purpose of assessment. Most other indicators are by nature less sufficient. They involve more value judgments (regarding the definition of high quality education) that depend on specific contexts. Retention as an outcome measure fails somewhat when the goal of the process is to select small percentages of students who will complete their degrees (as is the case in France and some other countries). However, even in this context attendance and retention studies are still useful in determining the characteristics of those students who succeed and those who fail.

Primary Studies: Syracuse University and the University of Limburg

Two studies will be contrasted to demonstrate the points mentioned at the beginning of this paper.



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| Primary Studies: Syracuse University and the University of Limburg<br>Two studies will be contrasted to demonstrate the points mentioned at the beginning of this paper. | |
|---|---|
| **Syracuse University Study**<br>(Tinto & Froh, 1991) | **University of Limburg Study**<br>(Bijleveld, 1991) |
| ▸ internally driven institutional assessment | ▸ externally driven comparative assessment |
| ▸ primary purpose is to improve program outcomes | ▸ primary purpose is to make institutions more accountable for their outcomes |
| ▸ assessment processes are as important as study conclusions | ▸ study conclusions hopefully motivate institution-specific investigations |
| ▸ contrasts between subpopulations (one academic unit contrasted against others) | ▸ one institution contrasted against others, or contrasts between different types of institutions |
| ▸ data is a balance of qualitative and quantitative, explorative definition of performance indicators | ▸ data is primarily quantitative with precise definition of performance indicators |

These two studies represent the best of what assessment has to offer in bringing accountability to, and fostering ongoing improvement in, higher education. Both avoid the common pitfalls of assessment efforts. Internal assessment studies sometimes: become too narrow in focus; don't involve multiple perspectives; don't develop valid instrumentation (use nationwide or poorly conceptualized instruments); and depend too strongly on quantitative methodologies considered to be "state of the art," but which are limited in their applicability (such as some applications of repeated measures path analysis studies). Unlike the Limburg study, many other externally driven comparative assessments lack sufficient focus; provide potential to motivate institutional investigation (partly because every institution thinks they are unique); group institutions into categories that are too general to be helpful and lose meaningful variations between institutions as a result [the Higher Education Data Sharing Consortium and the British study (Goedegebuure et al., 1990) combat this by identifying institutions]; lack sufficient focus on substantive differences between subpopulations within an institution (such as contrasting different schools, different students, or different levels of student involvement in academic life).

The Edge [illegible]sus Private

Th[illegible] study has one additional advantage in being the product of a private institution. As stated [illegible] nat this has meant for assessment is an increase in the drive to conduct studies for improv[illegible] rograms rather than for accountability. However, in the next round of accredation r[illegible]vs (SU is reviewed by the Commission on Higher Education Middle States Association of [illegible]olleges and Schools), Syracuse must demonstrate that good assessment systems are in place. We will be able to show that our assessment systems for the purposes of improving programs are excellent; partly due to a focus on maintaining an enrollment of high quality students (tuition dollars account for about 80% of the revenue stream). Faculty and administrators at the institution have conducted studies to improve programs to recruit and retain high quality students. We will be able to demonstrate that our assessment systems address accountability from the perspective of looking at the interests of students, parents, alumni, and friends as customers who support the institution with tuition dollars and contributions. Accountability to government and other interest groups is minimal.

The Harvard Studies initiated by the President, administered by Richard Light (1990), are another example of the type of internal assessment that develops out of a private American institution context where the focus tends to be internally motivated. These studies are conducted by faculty, administrators, and students to understand the needs of students and faculty and to improve programs. In contrast to the Syracuse Campus Studies, which have been conducted by administrators with faculty support, the Harvard Studies have been conducted primarily by faculty.

Looking at the private institution context in the United States should prove useful to institutions that strive to make their assessment efforts more internally driven and focused on students and faculty. In contrast, some of the assessment studies currently being conducted in the Netherlands and Great Britain are the best examples of externally driven assessments focused upon accountability to [illegible]unding sources. This is not to suggest that the assessment studies in the Netherlands and Great Britain do not respond to internal institutional audiences, but that their first priority is to external audiences. (Note: As we do get funding for minority students programs and for research, Syracuse and other private institutions are required to conduct some studies to respond to external audiences.)

## Conclusions: An Assessment Typology

Higher education institutions and systems must attend to both purposes of assessment: continuous improvement for programs, and accountability to external customers. However, the influence and clarity of particular reference points, both internal and external to the institution, create the demand for certain types of information and the corresponding assessment studies to provide that information.



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| | Purposes | |
|---|---|---|
| **Reference Group** | continuous improvement for internal customers (students and faculty | accountability to external customers (funding sources) |
| **Internal**<br>▸ faculty<br>▸ administrators<br>▸ students | Harvard Studies (Light, 1990); Syracuse Campus Studies (Tinto & Froh, 1991) | Limburg Study on retention (Bijleveld, 1991) |
| **External**<br>▸ type of institution<br>▸ private<br>▸ public<br>▸ cultural context<br>▸ U.S. states/regions<br>▸ European countries | Studies conducted by HEDS; Carnegie Commission Reports (Boyer, 1990); Peer Review Systems, the Netherlands | British performance indicator study (Goedegebuure, et al., 1990) |

Here we have attempted to define the contrasts and create a typology for the purpose of looking to examples and particular contexts to expand the scope and quality of assessment studies. With this expanded scope and quality, institutions will improve more rapidly, and internal and external customers will participate ever more so in this improvement process. In addition, the basic principles and processes of higher education will become clearer and more fully articulated as internal and external reference groups compare and contrast the issues they face within and across various cultural and historical contexts.

Attendance and retention analysis cuts across cultural and historical contexts, providing one of the more promising focuses for assessment studies. The outcome is very concrete--retention and graduation of high quality students. The connection of this outcome to funding is one of the most

straightfor . is extremely important as higher education is called upon to find new sources of funding .aps increasing tuition, financial aid, and contributions from private business). Information .hese studies will serve the changing external customer base of higher education, like the neec uild stronger relationships with business, and to respond to the increasing complexity o. .ucational and vocational needs.

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# An International Perspective on Assessing Baccalaureate Program Outcomes[1]

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Structural differences among the systems of higher education in Western nations are sufficiently great that comparison of the systems appears, at least initially, to be a futile exercise. Further examination, however, reveals some fundamental similarities that make it possible to suggest a common approach to assessing program outcomes at the baccalaureate, or first postsecondary degree level. In reaching this conclusion, the authors have drawn upon on-going studies conducted by the Institute for Management of Higher Education of the Organization for Economic Cooperation and Development (OECD) in Paris and upon presentations at the International Seminar on Assessing Quality in Higher Education, which was held at Cambridge University in July 1989.

## Some Differences Among Western Systems of Higher Education

Student access to a university education differs markedly on the two sides of the Atlantic. The first universities in America drew extensively upon models from the colonists' native countries in Europe and Great Britain. Thus only the most capable few entered higher education, and graduates were prepared primarily for the ministry, law, medicine, or teaching. With the passage of the Morrill Act in 1862 and subsequent establishment of land-grant institutions, however, access to higher education in the United States was broadened considerably, and the number of fields for which graduates might seek preparation began to multiply. Currently a wide variety of baccalaureate-granting institutions flourishes in this country because there is a societal expectation that virtually every person capable of graduating from high school who wants to attend college will have the opportunity to do so.

While actions taken in the 1969s to accommodate the burgeoning post-war college-age population make higher education more accessible in most Western countries, universities in Europe and Great Britain continue the medieval tradition of offering education for a population composed primarily of the intellectual elite. According to Riebel (1989), just over 20 percent of those completing secondary schooling in the Federal Republic of Germany pursue postsecondary studies. By the year 2000, the Thatcher government hopes to increase

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[1]This paper appeared in Evaluation Practice, October, 1990, vol. 11 no. 3. Reprinted by permission.

from 15 to 20 percent the proportion of secondary school graduates who continue their education at a British higher education institution (Chamier, 1989). In a number of these Western nations, children are selected during their early years of secondary schooling as potential candidates for higher education. They are placed in special preparatory curricula and then must pass rigorous written and oral school-leaving examinations in order to qualify for entrance to a university (Ottobre, 1979). These students are not only intelligent, but also are highly motivated to further their education. In addition, they are likely to be better prepared than graduates of secondary schools in the United States, having spent more time in school (Porter, 1986; Schuler, 1984), and having taken a broad range of courses taught in a rigorous manner.

In addition to differences in access that have a direct impact upon the character of the student population served in Western countries, there are also differences in the nature of validation processes for higher education in America and abroad. In the last quarter of the 19th century, increasing competition for students among American universities led to such diversity among curricula that high schools were having difficulty preparing students to meet the vast array of university entrance requirements. The need for standardization led to the formation of first regional, then national, associations that assumed responsibility for accrediting institutions of higher education (Neel, 1986). At present there are six regional accrediting associations in the U.S. and over 50 specialized organizations that accredit programs in fields such as business and nursing. Accreditation in the U.S. has evolved as a private, voluntary process, with institutions in a given region or specialists in a given discipline forming alliances for the purpose of setting standards and performing reviews to certify that the standards are being met (Rogers, 1989).

In England and Europe, validation (accreditation) is a function most often performed by the government or its agencies. The Council for National Academic Awards (CNAA) was established in 1964 for the purpose of assuring quality among British universities (Frazer, 1989). The CNAA approves courses of study, conducts annual monitoring activities, and provides institutional program reviews at five-year intervals. In France, the Ministry of Education's General Inspectorate monitors quality in that nation's institutions (Staropoli, 1989); and in the Federal Republic of Germany, where 98 percent of the funding for universities comes from the state, institutions are established and accredited by the government.

Universal Concern About Accountability

Europeans have long viewed competition--for reputation, outstanding faculty, capable students, and funding--as a hallmark of higher education in America. In the 1980s, however, competition was a world-wide phenomenon. With population increasing, many kinds of natural resources dwindling, and technological advances suggesting an ever-greater variety of enterprises in which monetary resources may be invested, every significant societal undertaking is being scrutinized in an unprecedented way to determine its efficiency and quality. Higher education has not escaped this scrutiny, despite its several-hundred-year-old

tradi aging its own affairs.

, the 1980s, accountability was the watchword for Western institutions of higher educ re universities careful stewards of the funds, both public and private, that they rece : these institutions efficiently administered? Does the education they provide actua value to the lives of their students? Are they fulfilling their mission of advancing knowledge in ways that bring tangible benefit to the societies that support them? These questions are being asked throughout Europe, Great Britain, and the United States.

In the U.S., governors, legislatures, state coordinating boards, university trustees, and even the voluntary regional accrediting associations have begun to insist that postsecondary institutions demonstrate their accountability for the funding they receive by providing evidence that they are producing desirable outcomes. In England, where universities did not experience the intense emphasis on practical education that followed the U.S. Civil War, there now is growing concern about the contribution of higher education to economic development. The government wants to increase the proportion of youth who go to college (Chamier, 1989), and the Department of Employment has launched a bold new initiative called "Enterprise Initiative" to ensure that graduates of British Universities will be well prepared to assume positions of leadership in business and industry (Elton, 1989). In addition, the University Grants Commission, which provides British universities with the bulk of their funds, has recently asked universities to introduce performance indicators and to provide evaluations of their work. They are also about to introduce a system of funding by contracts instead of through deficiency grants over a relatively long period (Kogan, 1989).

In Holland, a 1985 Ministerial bill, "Higher Education: Anatomy and Quality," encouraged academic institutions to undertake their own internal evaluations, but also provided for evaluations by independent external visitation committees that operate under the auspices of the Inspection Office of the Ministry of Education (Drenth, van Os, and Bernet, 1986). The National Board of Universities and Colleges, which is directly responsible to the Swedish cabinet, has been commissioned by that government to evaluate higher education for the primary purpose of gathering information for central decision-making (Furumark, 1981). In 1985 the President of France created a National Committee for Evaluation to undertake special studies designed to provide broad evaluations of French universities (Staropoli, 1986). The Committee reports directly to the President and is free to make public the results of its investigations.

Peer Review: The Common Evaluation Tool

World-w me common responsibilities for preserving humankind's intellectual heritage , it to the current generation of young adults, for developing in these young people the powers to reason and to communicate their ideas to others, and for advancing the status of knowledge in the disciplines through individual scholarship and research. There are many ways to fulfill these responsibilities, and the greatest strength of universities in free societies is that professors and students have the right



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to use their imaginations to create unique paths to their goals.

Given the enormous diversity of acceptable goals for higher education, and the even greater variety of means for attaining those goals, it certainly is not surprising that academicians have not agreed upon a universally-applicable set of standards, performance indicators, or assessment strategies for gauging the quality of higher education outcomes. However, there is a time-honored evaluative process that is almost universally accepted within academe: Peer review.

The voluntary accrediting associations in the United States have always relied upon the judgment of a visiting committee to ascertain the status of institutional practice vis-a-vis stated goals. In recent years the Dutch have begun to develop a similar approach to institutional evaluation (Vroeijenstijn, 1989). Since their founding in the Middle Ages, universities in England (Elton, 1989) have invited external examiners to assess student achievement and thus maintain standards across institutions within the various academic disciplines.

The authors have argued previously that the assessment of outcomes in higher education should be linked to on-going institutional processes such as strategic planning and peer review (Banta, Fisher, and Minkel, 1986; Banta and Fisher, 1989). The key point in this assertion is that these should be institutional processes, owned by the individual university, not externally-imposed processes. Only if each institution has the freedom to pursue its own goals using its own approaches and its own means of evaluation will we be able to nurture the creativity that can truly advance the status of knowledge.

This is not to say that there should be no common methods for assessing quality. As indicated above, peer review, whether for the purpose of judging institutional quality or assessing individual student achievement, is one evaluative process that virtually all institutions accept. And since the judgment of reviewers must be informed by evidence, a variety of assessment procedures, some of them common to groups of institutions, may be incorporated in the review process as sources of evidence.

Student progress through the curriculum, including passage of course sequences and intermediate examinations and ultimately completion of the course of study, is one indicator of program quality. As Drenthe and his colleagues (1986) at the Free University of Amsterdam have pointed out, student progress may differ acceptably from one curriculum to another and among types of institutions. But faculty at each institution can establish their own expectations, then gauge student success against those standards.

Student placement in employment, especially in jobs related to the fields in which they concentrated their studies, is another kind of evidence that faculty may wish to collect as they assess their programs. In many fields, placement of some students in graduate or professional education is an additional performance indicator. Program reputations certainly are enhanced by special recognition (honors and rewards) accorded the achievements of

current st aculty, and graduates.

Pe ns of program quality as elicited in questionnaires and interviews constitute another impo nt genre of evaluative data. Students can be asked during and after their courses if they have learned content and skills at rates that are personally satisfying. They also can provide ratings of services, such as advising and placement, that have been designed to assist them in obtaining maximum benefit from their studies. Former students who did not complete courses of study should be asked why they decided to leave a program or the university itself. Graduates and their employers should be surveyed periodically to assess levels of satisfaction with career preparation provided by the university. Students' parents may have valuable insights to share. Moreover, systematic efforts should be made to assess faculty opinion about the qua y of student progress, institutional services, and program administration.

While all of the indicators described above yield important information about institutional quality that can serve to inform the judgment of program reviewers, perhaps no other criterion attracts more attention than that of accessing the competence of graduates.

Assessing the Competence of Baccalaureate Recipients

The earliest comprehensive examinations for baccalaureate candidates at American universities were similar, at least in form and purpose, to those given in Great Britain and Europe (Dressel et al., 1961). That is, written and oral exams, the latter often administered by examiners from outside the institution, were used to assess the extent of learning achieved by the carefully selected ho had successfully completed a prescribed course of study (Smallwood, 1935).

The earliest comprehensive exams were designed specifically for use in a given institution and for the purpose of certifying that individual students had achieved a certain level of performance (Dressel & Delisle, 1969). Later, faculty from several institutions began to collaborate on the baccalaureate exams, and now some of these are nationally standardized. In addition, in the United States, the focus on individual student achievement has shifted. Comprehensive exams are being used more and more frequently to provide evidence of the quality of educational programs as opposed to the level of individual student attainment.

As long as curricula were virtually identical for all candidates for the baccalaureate, the common written exam and oral defense seemed quite appropriate. However, in the 1890s, following the introduction of the elective system, use of comprehensive exams as criteria for awarding the baccalaureate in the United States experienced a decline (Jones, 1933). During the first half of the 20th century, there was a resurgence of interest in comprehensive testing to certify individual attainment, but the student activism of the 1960s contributed to a sharp decline in this kind of testing. As colleges yielded to students the right to choose their own paths through the curriculum, they also gave up the responsibility



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for certifying what students had learned.

Among other societal influences, the call for accountability in higher education and other agencies supported by public funds produced in the 1980s a renewed interest in finding out what students know when they complete their baccalaureate studies. However, in the United States, as stated previously, the focus is more upon discovering through measurement of student achievement the strengths and weaknesses of curricula and methods of instruction than upon setting common standards of attainment and passing or failing individual students on the basis of their exam performance. Even scores on exams administered by external professional agencies for purposes of granting licensure or certification to individuals also are being used by some institutions for program evaluation.

In addition to the more traditional paper-and-pencil instruments, U.S. faculties have begun to use performance measures that simulate experiences students will encounter after college. Supervisors' ratings of an internship or field experience, an in-basket exercise, a poster presentation, an interview, a series of speeches, and a portfolio, are examples of such measures. In some of these performance samples, notably the videotape of speeches made at various times during the student's career and the portfolio of writing samples, faculty interest is not so much in the relative levels of students' final performances as in the amount of growth each exhibits throughout the series of behavior samples. While the graduates of a given institution may not be capable of functioning above the national average on a standardized exam, their college experience may have contributed substantially to their development of important skills.

In the United Kingdom and Western Europe, candidates for the baccalaureate are presented with broad topics that call for understanding of concepts in their fields of study, then are asked to write essays that demonstrate the breadth and depth of their understanding. A thesis or report on an original project may also be required (Porter, 1986). Subsequently, these students must be prepared to provide on oral defense of their written work if required to do so. Panels of reviewers then pronounce judgment as to the fitness of each candidate for graduation and the class of degree to be awarded. Students who do not pass their examinations do not receive degrees.

A few selective institutions in the United States also employ comprehensive examinations to certify the competence of graduates. However, no more than half of the postsecondary institutions in the United States have a comprehensive examination requirement (El-Khawas, 1989), and most of the remainder employ such measures primarily for program evaluation purposes.

## Discussion

Substantial differences still exist on the two sides of the Atlantic between the levels of preparation, ability, and age of students entering postsecondary institutions. Moreover, differences in sources of validation and support for institutions have an influence on the

meth[illegible] n assessing baccalaureate program outcomes. It might appear, for instance, that u[illegible]s in the centrally-planned systems of higher education in Great Britain and Europ[illegible] be subject to a more uniform set of evaluative criteria than the universities in Americ[illegible]ere accreditation has traditionally been conferred by voluntary associations of institut[illegible]

However, all Western universities have maintained a substantial degree of independence from external influences, and thus are more alike than different in that they are more attentive to standards they have set for themselves than to external criteria. In addition, such factors as improved communications technology, increased world-wide competition for resources, and demands for accountability have served to increase the similarities and mitigate the differences among systems of higher education in the Western world. For instance, since the 1960s, American universities have come under increasing state control (Kells, 1986); and in Europe, universities are experimenting with voluntary associations to assess and strengthen program quality (Vroeijenstijn, 1989).

Peer review appears to be an almost universally accepted evaluative process in Western universities. The authors believe that outcomes assessment activities can, quite naturally, be incorporated in program reviews as a means of providing evidence to inform the judgment of faculty as well as external reviewers. Maximum effectiveness will be realized if peer review is an internal process, initiated by the individual university, focused upon its goals, and aimed at improvement as opposed to mere assessment of status.

If Western universities can convince governmental authorities that internally-initiated peer review is the healthiest form of evaluation for higher education, then we should come together to study the process and perfect it. Scholars on both sides of the Atlantic have already begun to contribute to that dialogue.

Elton (1989) has suggested that external reviewers receive some training for their work. Studies co[illegible]35) of British external examiners reveal that while these assessors of studen[illegible] are eminent persons chosen for their knowledge of a field and experience in it, they are largely uninformed about good practice in designing examinations, know little about statistics, and base their decisions primarily on their own experience rather than upon theory or systematically-collected evidence.

Findlay and Allsop (1989) are strongly committed to internally-initiated program review, but recognize that external authorities need simply-stated evaluative summaries and thus often resort to the use of quantitative indicators. These investigators are using document analysis, observation, and interviews to identify the evaluative criteria that academics at Portsmouth University in England use in making judgments about program quality. They hope to develop ways to supplement quantitative data about programs with easily readable summaries of qualitative judgments.

In considering cross-national comparisons of student achievement, Harris (1989), the



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U.S. representative on the OECD commission currently investigating this topic, has suggested that a useful beginning point would be to compare the time allotted in the various university systems for students to study a given discipline, or major constructs or topics of the discipline. This is a basic step in curriculum mapping, which is another technique that could be useful in program review.

Finally, Lapointe (1989), who directs the National Assessment of Educational Progress for elementary and secondary school levels in the U.S., has proposed a "second generation measurement program" with potential applicability in postsecondary institutions. This program would include (1) a community profile that characterizes the larger environment in which education takes place, (2) a description of the environment for learning in the unit being reviewed, (3) surveys for students and instructors that elicit descriptions of classroom practices and teaching strategies, (4) a set of student performance tasks designed to measure higher-order intellectual skills, and (5) a set of achievement measures in a variety of disciplines.

We have much to learn from each other, and collaboration is becoming increasingly important. Universities must clearly establish their right to independence; but in order to safeguard this right, each must chart its course explicitly and prepare itself to furnish credible evidence of the quality of its performance.

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# Institutional Research and Planning to Support Decentralization and Privatization:

## Building Self-Correction and Accreditation Systems

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### The Problem

Higher education in Eastern Europe faces several significant problems during the democratization of government and education. Disparate institutions have become autonomous in a management sense, but with inadequate mechanisms for accountability and quality control. In addition, they remain almost totally dependent on a declining base of financial support from different governments and departments. Demographic trends coupled with the fact that only a small percentage of the eligible student population currently enrolls full-time at universities and colleges suggests that pressures will continue to build to increase the number of spaces available to students. However, the employment market has declined precipitously and many who graduate will have great difficulty in finding work. While all these pressures suggest a need to make many changes, the disparate and traditionally conservative nature of higher education institutions prevents them from addressing these problems. New management and planning systems are needed.

Some of the major transition issues at this point are: (1) building better self monitoring and improvement mechanisms, (2) affirming a collaborative accountability to the audiences and markets of higher education, and (3) exploring new markets such as business and education consortiums to insure more financial support, employment for graduates. The evolving audiences and markets of these institutions of incoming students, research support dollars, employees of graduates, alumni, and government agencies must be better understood to reduce the potential of externally imposed control.

### Potential Contributions of Institutional Research in the United States

Institutional research/planning (IRP) processes and organizational structures like those that have matured in higher education institutions in the U.S. could provide models to support the transition of higher education in Eastern Europe from central state control to decentralized management.

Increasingly, institutions in the United States see the need to collaborate with each other to support IRP that addresses changing students and research markets. Declines in traditional student populations and resources for sponsored research have created a climate that demands both competition and collaboration. IRP models that support the management of institutions and the planning of consortia of institutions would be particularly helpful to Central and Eastern European universities looking for opportunities to work with other institutions in addressing common educational issues. Private institutions such as the Higher Education Data Sharing Consortium (HEDS) of which Syracuse is a member, provide case studies of balancing competitive and collaborative forces to strengthen the quality of academic programs. Academic programs within private institutions enjoy on average more autonomy than those within public institutions.

Three key methods used in IRP would be demonstrated to show higher education leaders in Eastern Europe a path towards both decentralization and increased quality. The use of these three key methods within a decentralized management structure at various institutions would build essential processes for self-study and external reviewers would build essential monitoring systems for relatively autonomous institutions.

Implementing Institutional Research and Planning in Eastern Europe

Developing stronger IRP can be accomplished in the following ways: first, through visits to selected Eastern European institutions by researchers/planners to demonstrate IRP processes with senior faculty and administrators and to help set up IRP organizational support structures; and second, through visits to U.S. institutions by selected staff for periods of one semester (15 weeks) to observe and participate in IRP where academic leaders have significant administrative autonomy.

Initial contacts would require establishing a frame of reference regarding the leadership styles, organizational structures, and values held by senior faculty and administrators at selected institutions in Eastern Europe. Initial contacts would also establish ongoing working relationships with faculty and administrators.

Visitors to selected Eastern European institutions should recognize the various levels of higher education that serve somewhat distinctive purposes: first, academies of research and universities of arts and sciences; second, universities of economics, universities of medical, technical and agricultural sciences, and colleges of arts and physical education; third, colleges for teacher training, technical training, economics, elementary school teacher training, agriculture, medicine, and state administration. It is essential to identify the major issues faced by these various levels of institutions such as establishing stronger links between research academies and first-tier universities, strengthening the business market place for second-tier institutions, and building stronger higher education and secondary education collaboration for third-tier institutions.

# Developing the Tools for Using National and International Data Bases: The Issues of Content, Assessment, and Application

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## Introduction

Comparative postsecondary education research may be divided into two categories: theoretical research and applied research. Theoretical research focuses on applying social scientific methods and principles to the study of postsecondary education in different societies, including the disciplines of sociology, economics, politics and--most especially--anthropology. Indeed, the true spiritual home of most academic comparativists would appear to be the cross-cultural perspective of ethnography, together with related research methods. Certainly most U.S. university programs in comparative education tend to be located in the social foundations divisions of schools of education or in anthropology or sociology departments.

Applied comparative research consists of all the activities undertaken by educational institutions, government agencies, foundations, and educational associations to develop and apply standards for relating the educational processes and products of one system to those of another. This includes such activities as developing common terms and operational definitions, developing and maintaining data bases, analyzing transcripts and other evidence of curriculum content and academic achievement, interpreting differing regulations and management systems, and other activities that in the United States are the province of deans, registrars, institutional research officers, association and foundation staffs, and public officials. Applied comparativists (who may not see themselves as such but who conduct comparative research all the time) tend to come from a wider range of backgrounds than academic comparativists, a situation that enriches their perspective on issues even as it sometimes restricts their in-depth understanding of the cultures with which they must deal.

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[1]This paper was prepared by E. Stephen Hunt in his private capacity. The views are those of the author and no official support by the U.S. Department of Education is intended or should be inferred.

ntributions of both groups of comparativists are critical to achieving progress towar velopment and use of practical and sensible methods of measuring educational achie and quality across national boundaries (and even within some countries). Acad omparativists have helped those charged with this task to avoid crude "box score" compa s that are not based on an understanding of underlying issues or structural differe es, and they have reduced misunderstandings due to misreading of evidence or confusing forms with substance. But they have occasionally criticized the very nature of the task itself, apparently because the anthropological research ethos of so many comparativists recoils at the notion of direct comparative assessment and, most especially, the underlying implications of competition and judgment. Applied comparativists have not always recognized or appreciated this perspective; this has led to several failed attempts at cooperation.

Things do not have to be this way, but overcoming differences in professional socialization is not easy, especially when the groups involved are as different as culture scholars, applied statisticians, and public policy professionals are. There are, however, quite enough objective difficulties to overcome in developing the sort of modalities proposed at this conference to make differences of approach pale by comparison. I would cite but three of these difficulties: creating comparable data bases; creating crosswalking mechanisms for actually using such comparable data; and developing standards and definitions for concepts that permit the collection of data in such a manner as to allow the data bases and the crosswalks to function as intended. These will be discussed in reverse order.

Standards and Definitions

Before comparison of any kind can proceed, concept definitions and standards for related data input must be acceptable and agreeable to all parties concerned (both the political and research interests) and must be shown to produce reliable results. Since sovereign states are rarely likely to surrender their own internal definitions and standards in favor of someone else's, and since many countries (such as the United States) operate without a uniform system of definitions and standards, comparison has to be made via a laborious process of pushing for cooperation where possible and making up for it where it isn't.

Pushing for cooperation, of course, means active participation in international efforts to arrive at common data systems. Many of us in government are interested in having the United States actively participate--at the technical level as well as the political--in efforts by the O.E.C.D., the European Community, and other country groups to develop such internationally useable systems. Informal efforts are also welcome, as typified by the work of the ERIC Clearinghouse on Higher Education in developing an international data-sharing network. These efforts will, it is hoped, receive encouragement from current interest in using international comparisons to spur reform in U.S. education. But in the meantime much can be done to improve comparability using existing arrangements.

One project currently underway in the Higher Education and Adult Learning Division,



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where the author works (and under his lead), is the development of a crosswalk from the ISCED to our federal standard classification system, the CIP (Classification of Instructional Programs). The author was fortunate to be one of the co-authors of the 1990 CIP, which is an extensively revised and updated edition of this system--in many ways virtually a new system. When finished, this crosswalk will provide users with a reliable method of interpreting U.S. instructional program data using ISCED, one that will also be officially approved by the Department of Education and other Federal agencies. The development stage of the ISCED/CIP Crosswalk has begun; it should be ready for use sometime in late 1992 or early 1993.

Many other existing systems can be made compatible for comparative purposes by developing mechanisms such as a comparative crosswalk of terms. A very useful task, in this author's view, would be for comparativists to inventory such existing systems with a view to determining whether compatibility is possible, and if so, to allocate responsibility for doing the work among themselves. Partial data utility might be possible even if systems cannot be crosswalked directly. This would certainly be better than nothing at all.

Developing Data Systems

Beyond crosswalking taxonomic concepts lies the territory of coding systems and the design of methods and systems for accomplishing comparisons. This can be highly technical, as in the case of the design of computer software for manipulating data, or merely highly complex, as in the development of coding systems for ordering educational data from different sources in a logical and uniform way. The latter task is the subject of another project on which this author is working, and also of a very important ongoing project in the private sector.

One of the most significant educational data bases of the United States Government called the Survey of Earned Doctorates, a survey of all doctorate recipients graduating from U.S. institutions. It is conducted by the National Academy of Sciences for a consortium of federal agencies that includes the Department of Education and the National Science Foundation, and has been underway since 1920. The importance of this data base for comparative purposes is that it contains background data on all foreign students who earn U.S. doctorates, which adds up to a small but significant sample population each year--and a growing one. The background data include information on country of birth, place of birth (city and region), country of current citizenship, academic career since secondary school, country of residence (sometimes different from that of birth and citizenship), subjects studied at each level of education, and future plans. This is a rich data base for all sorts of analyses, but it requires the development of an up-to-date coding system that permits the foreign data to be used, including a system for assigning variable codes to different institutions and degree levels across countries.

The Higher Education and Adult Learning Division is cooperating with the National Science Foundation in developing a master coding system for the foreign institutional data

collected [illegible]urvey of Earned Doctorates. This system will allow U.S. and foreign institution[illegible]e data to be compared on a comprehensive basis, and will establish a workable [illegible]gy of institutions. When this stage is concluded, the project will expand to link the IS[illegible] CIP Crosswalk and the SED Coding System, thus developing a useful tool for compar[illegible] academic work by level, content, and institutional or degree type. The initial stage of the SED Coding System may be ready later this year.

This project is indebted to another, much older project along the same lines but using more traditional methods. [illegible]orld Education Project of the American Association of Collegiate Registrars and Admissions Officers. For many years this private initiative has endeavored to produce accurate and practical guidelines for use by postsecondary institution officials in assigning credit for non-U.S. academic work, placing foreign students, and interpreting foreign credentials. It is a quiet but worthy effort at applied comparative research that deserves to be much better known than it is, and should receive more support for the continued production of guidebooks.

## Conclusion

Fundamental applied research of a descriptive and analytical nature is essential to developing effective measurement, assessment, and quality control procedures on a cross-national basis. The knowledge base of those who will implement such modalities needs to be increased, and this in turn will require better data bases and their essential prerequisite, better data input. If that sounds like too much suspicious jargon, try this: you can't get there from here without doing two things--broadening your understanding of "there" and why you want to get to it, and improving the tools you need in order to make the journey. The Higher Education and [illegible] Division of the U.S. Department of Education's Office of Research hopes to [illegible]sting the field in the development of some better descriptive tools, as well as by cooperating with others who are interested in improving the ability of the comparative education research community to serve both its own research needs and those of society.



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# New Approaches to Evaluation in Austrian Higher Education

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## Introduction

New approaches in the evaluation of Austrian higher education have been the subject of recent discussions. These discussions are related to changes in higher education policy and a new assessment of priorities, problems, and challenges in Austrian universities. During the 1960s and 1970s, expanding and democratizing higher education was the priority.

In that time the steering function of the centralized governing body was strengthened and authorities as well as the public paid a great deal of attention to the system's overall performance. During the 1980s, the maintenance and improvement of quality became the most important issue. This change was accompanied by a trend towards a decentralization of authority and attempts to strengthen institutional autonomy. More and more attention has been paid to the performance of (and the differences in the performance of) single institutions. However, these new approaches in the evaluation of Austrian higher education--that is, those emphasizing the relative performance of individual institutions--face serious obstacles.

## Higher Education Policy in the 1960s and 1970s: What Kind of Information about the System Was Thought to be Relevant?

In the 1960s, when Austria began a deliberate expansion of its higher education system, a two-fold rationale emerged for doing so:

--the expectation of a significantly growing demand for graduates; and
--the need to democratize and broaden access to higher education.

In the Austrian context of a highly selective secondary school, the most important prerequisite for meeting these goals was to expand and reform the "gymnasia" (the elite track of secondary schools). Another important step towards mass higher education was the rationalization of the curricula in universities. The mixture of medieval customs and traditions that dominated Austrian higher education was to be clarified and replaced by a

system of unified legal regulations for courses of study. These regulations would bind all Austrian universities. This legal system would enable the authorities to make the universities responsive to the demands of society and the economy.

These legal reforms resulted in an increased responsibility for the ministry, which acted as a centralized governing body as opposed to the self-governing bodies of the single institutions. In other words: an organizational pattern that already dominated Austrian higher education was remarkably intensified. Burton Clark refers to this pattern as the "continental mode of authority distribution."[1] This organizational pattern is characterized by the concentration of authority at the bottom (chair-holder) and at the top (ministry) and a weak authority at the enterprise level (the single institution), meaning a strongly centralized administration with little institutional autonomy.

What is important in our context is the fact that policy priorities as well as organizational characteristics shaped the evaluation of Austrian higher education. The dominant question centered on the success of the expansion and democratization of higher education. To deal with that question the administration created a remarkable system of statistics that provided information about the overall performance of Austrian higher education. A number of publications (the most important is the "Report on Higher Education," which is published every three years) make this information available to the legislator and the general public.

This type of information reflects the organizational patterns of Austrian higher education. It is provided by the central governing body responsible for the overall systems; therefore, every problem is addressed at the overall level. Since Austrian higher education is highly homogeneous and since each institution is supposed to have the same standards and characteristics, information about the institutional level (especially about differences between single institutions) was regarded as less important. The single institution must conform with the central regulation and the wisdom of these regulations is supposed to guarantee high quality. Under these circumstances there is no need for the single institution to undertake a self-study nor is there any interest in this type of information.

Issues of the 1980s: Quality and Institutional Autonomy

Beginning in the late 1970s new issues emerged and eventually replaced the former priorities in higher education policy during the 1980s. The growing number of students was no longer regarded as a desirable improvement of the labor force but rather as an oversupply and a burden for universities by endangering the quality of higher education. Those who stress the question of quality refer primarily to the long duration of studies and the high

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[1] Burton R. Clark, The Higher Education System: Academic Organization in Cross-National Perspective. Berkeley: University of California Press, 1983.



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drop-out rate.

Few students graduate within the minimum time required for a degree and more than half take five or six semesters longer than the minimum. This fact implies a rather advanced age of graduates and a late entrance into the labor market. The number of students who complete their courses has continuously declined in the past and the drop-out rate is now above 50 percent. Thus expansion of Austrian higher education is primarily one of the students, much less of graduates: whereas during the last two decades total enrollment has more than quadrupled, graduates have hardly doubled.

Although those problems are not entirely new, they preceded the expansion of higher education and now attract more attention because

--they have worsened in relative terms (increasing average length of studies, increasing drop out rate);
--they have worsened in absolute numbers due to the increase of students,
--in the context of the financial difficulties of universities, high drop-out rates are considered a waste of money.

There is a growing consensus among experts as well as the public that it is necessary to increase the "throughput" in Austrian higher education.

At the same time there are serious discussions about the distribution of authority in Austrian higher education. Many experts hold that the weak institutional autonomy of Austrian universities is at least one reason for the problems mentioned above. The conviction of the 1960s that a strong central governing body is more appropriate to the transition to a mass higher education system is no longer shared by the majority. The central administration had to realize that the real power to steer and even influence the system is much smaller than its legal authority.

New Approaches to Evaluation in Higher Education

Again, the changes during the 1980s had remarkable consequences for the evaluation of higher education. The information provided by official reports is absolutely insufficient to deal with the problems of drop outs or the long duration of studies. To give only one example: The "Report on Higher Education" contains an impressive number of statistics about new entrants and total enrollment broken down by any number of students who make serious attempts to complete their studies (as opposed to "Fictional Enrollments," that is, students who are only enrolled because they receive some benefits; guesstimates for those students range between 5% and 25%). There is even less information about the educational process of the enrolled students. Obviously the central administration has no access to this type of information. Universities, on the other hand, have little interest in this type of information. As mentioned they have neither an obligation nor an incentive to undertake a self-study that could answer at least some of the relevant questions.

However, the new issues of quality and institutional autonomy have increased the interest in information at the institutional level. On the one hand only information at that level is appropriate to the uncovering of educational deficiencies. On the other hand, this information is crucial to the implementation of new types of central administrations that are compatible with increased institutional autonomy--that is, administrations which confront institutions with a pattern of incentives instead of detailed prescriptions. While this type of steering enhances the discretion of the institutions, it also requires more accurate information about the institutional performance.

Up until now the central administration has come forward with a mixture of encouragement and regulation to stimulate universities to undertake self-evaluation. Most remarkable in this context is an amendment to the University Organization Act that was passed last year which obliges the Minister for Science and Research to guarantee a periodic evaluation of the single institutions.

There are some promising beginnings in that process, such as the evaluation of physics research in Austria. This procedure, which is organized by the Austrian Physics Society, involves the entire community of physicists in Austria. Its final report will provide a basis for decisions about future developments.

However, there are also serious obstacles to the advancement of institutional evaluation, especially a mutual lack of trust between the ministry and the universities. From the point of view of the ministry the institutions have to prove their ability to manage a higher degree of self-government. One way to prove this is to undertake serious self-studies. The universities are mistrustful as well. What use would the ministry make of the results of such self-evaluation? This, in fact, is not clear even within the ministry. The reports may have no consequence at all, which discourages those in the university community who support self-evaluation. Therefore, it is important to develop a procedure that will reduce this mutual lack of trust.



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# Assessing the Quality of Higher Education: A Mexican Perspective

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## The Mexican Higher Education System: An Overview

Twenty years ago, in 1970, the Mexican Higher Education System (MHES) had 271,275 students. In 1989, the system had an enrollment of more than 1,200,000 students. This includes the Normal Schools (where elementary school teachers are educated) which have had university-level status since 1985.

As a result of demographic growth and of increases in the proportion of cohorts that have access to the university level, the expansion of the MHES has been impressive.

The system includes different kinds of institutions: public (state-supported) and private; large universities, medium-sized technological institutes, other smaller professional schools and technological institutes, other smaller professional schools and now, normal schools. Since the latter also serve as in-service training centers for students who wish to be school teachers, not the same kind of students as those in the other Higher Education Institutions (HEIs), the normal schools will not be considered in the following analysis. In fact, to including normal schools in the analysis would be misleading, since there are more of these than other higher education institutes (346,225 public and 121 private), but they only have 131,046 students.

The other, more conventional higher education institutes total 325, distributed as follows:

TABLE 1

The Mexican Higher Education System
Undergraduate Students, 1988-89

| Type of Institution | Institutions | Students | St./Inst. |
|---|---|---|---|
| **PUBLIC INSTITUTIONS** | 155 | 898,420 | 5,796 |
| Universities | 40 | 731,592 | 18,290 |
| Technological institutes | 94 | 159,239 | 1,694 |
| Other professional schools | 21 | 7,589 | 361 |
| **PRIVATE INSTITUTIONS** | 170 | 171,145 | 1,007 |
| Universities & Technological institutes | 28 | 114,941 | 4,105 |
| Other professional schools | 142 | 56,204 | 396 |
| **TOTAL** | 325 | 1,069,565 | 3,291 |

Source: Anuario Estadistico 1989. Licenciatura ANUIES.

Considering that they are institutions of very different size with the same institutional designation (very large and very small universities, schools, etc.), it is interesting to see a classification of the HEI's according to their enrollment figures:

TABLE 2

Mexican Higher Education Institutions by Size

| Students | Public HEI's | Private HEI's | Total |
|---|---|---|---|
| More than 100,000 | 1 | – | 1 |
| 50,000 to 99,999 | 4 | – | 4 |
| 25,000 to 49,999 | 4 | – | 4 |
| 10,000 to 24,999 | 8 | 4 | 12 |
| 5,000 to 9,999 | 13 | 3 | 16 |
| 3,000 to 4,999 | 9 | 8 | 17 |
| Less than 3,000 | 116 | 155 | 271 |
| TOTAL | 155 | 170 | 325 |

As is easily seen in Table 2, 17 public higher education institutes and only 4 private institutions have 10,000 students or more; 138 public higher education institutes and 166 private have less than 10,000 students.

If the mean for students in public universities is 18,290 (Table 1) it is easy to see that these institutions are large. This includes the huge National University of Mexico City (UNAM, with 134,150 undergraduate students). At the same time, all other higher education institutes have (with a few exceptions) less than 3,000 students.

The Quality of Higher Education Institute in Mexico: A First Approach

With very few exceptions, the 155 small, private higher education institutions do not have good levels of quality, as far as it is possible to judge from their resources: they have no full-time faculty; their libraries are very poor, and they have no laboratories. Obviously they have no research activities and, in many cases, their management is concerned with profit and not with academic purposes.

The inability of the inexpensive (or free) public higher education institutions to cope with the huge serial demand for higher education in the 1970s caused the private education institutions to flourish. The lack of real control from the Ministry of Education (Secretaria de Educacion Publica, SEP), in spite of its legal liabilities, contributed to this growth.

On the other hand, the larger private HEIs are quality institutions with well-furnished and equipped campuses, good libraries, full-time faculty members, and research activities. They attract their students from the small affluent sectors of the population that can afford their expensive fees, and receive economic support from large corporations. They are also well staffed and efficiently managed, without the union problems of public institutions.

These large private higher education institutions are also impressive from an outcomes perspective. Their alumni are well regarded for their qualifications; in fact the leading private institutions, such as the Technological Institute of Monterrey, the Univ. Iberoamericana, and the Autonomus Univ. of Guadelajara are unanimously considered as part of the better higher education institutions in Mexico.

The Public Institutions

The 21 small "other professional schools" are very heterogeneous and include, for example, the Army's officers school, and some fine arts and music schools. We will not include them in our analysis.

The 94 public technological institutes are, by contrast, very homogeneous: they are small, well-equipped, with a good number of full-time faculty members, but with some important problems that prevent faculty members from offering good quality teaching. These include very poor operating budgets which leave large laboratories inoperable and library

buildings wi ut books; large union problems which produce an incredible faculty absenteeism e; very highly centralized academic planning with curricula and teaching programs de ed in Mexico City (leaving faculty largely unaware if not totally alienated from this process); and a very high level of political unrest among students which leads to frequent strikes and campus conflicts.

The 40 public universities are, once again, very heterogeneous both within and among themselves. In fact many local campuses or schools are so large (with 10,000 students or more in each) that these differences are logical. Some of these units are indeed very good, but the general level is quite deficient.

Some of the reasons for the deficiencies are the same as found for the previously considered non-autonomous, technological institutes--poor operating budgets (especially from 1981 on)--but other reasons are different. As autonomous institutions, public universities have their own unions, and in many cases a very strong power struggle leads to confrontation between right and left radicals and the official party. In fact most higher education institutions are ruled more or less openly by one or another of the political parties.

It is important to note that some public high quality graduate and research institutions that are not being considered. In some instances undergraduate education is not as good as graduate education, as seems to be the case for the UNAM, which has 9,617 graduate students, not to mention more than 100,000 senior high school students, for a total of nearly 300,000.

The Need for a More Precise Evaluation: Recent Mexican Efforts

The first attempts to evaluate quality in a Mexican higher education institution occurred in 1967, when the Technological Institute of Monterrey started a self-study process with the methodology and advice from the American Southern Association of Colleges and Schools. Since that time the Institute has been reviewed by the American Southern Association of Colleges and Schools. The Institute is the only Mexican higher education institution that, as an institution, is accredited in the U.S. Some programs of other private institutions have also submitted themselves to specialized accreditation.

In 1969-1970 four other higher education institutes (two public and two private) also conducted self-studies under the advice of Dr. Pablo Latapi from the then recently established Center of Education Research (Centro de Estudios Educativos, CEE).

This center pro of the self-study methodology, and the Ministry of Education, SEP, started a progra in 1974 to make public universities conduct self-studies.

By that time other private higher education institutes had conducted their own self-study processes and started creating planning and institutional research offices, as was also the case for the Universidad Autonoma de Aguascalientes. Established in 1973, it is one of



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the few public HEIs where those efforts succeeded. In most cases, planning or institutional research offices were established at public institutions because of the requirements of the Ministry of Education, but were not operational. Some other exceptions were the public universities of Nuevo Leon, Yucatan and the Metropolitan (established in 1974).

Beginning in 1978, the Ministry of Education, together with the National Association of Universities (Asociacion Nacional de Universidades e Instituciones de Educacion Superior) SEP-ANUIES approved a national "Plan" for Higher Education. In 1979 a permanent-planning system was established, which considered the national and regional levels. It is based on institutional planning offices or "unidades institucionales de planeacion."

At its 1983 meeting, the National Association of Universities (ANUIES) tried to establish a common system of evaluation; as the proposals received from different higher education institutions at the meeting were difficult to integrate, the Association decided to hold another special meeting in 1984, to consider an evaluation system.

For the 1984 meeting, staff prepared a document that, in fact, the Association approved as the official guidelines for evaluation, and recommended that the Mexican Higher Education Institute voluntarily adopt the model.

In spite of those recommendations, each institution continued doing as before, and the economic crisis that struck the country from 1982 on and especially in 1986-87 produced strict budgetary cuts and unrest because of wage reduction in real terms, forcing these issues to become the most important concern.

After the 1988 elections, the federal government launched an ambitious six-year program to recover economic growth. The success in the renegotiation of external debt in 1989 permitted the government to promote its modernization program.

At the higher education level, the program includes as an important focus the theme of the evaluation of higher education institutions.

The "Program for the Modernization of Education" establishes a holistic evaluation system which includes five aspects: student performance (including both cognitive and non-cognitive elements); curriculum and teaching; educational management; public educational policy; and the social impact of education.

The evaluation is conceived as a participative enterprise, involving all persons who take part in the educational process who have to be, at the same time, agents and objects of the evaluation process.

Specifically for higher education, the program describes the task that must be accomplished:

> The motion of a national process for the evaluation of the Higher Education system for assessing its present level of performance, productivity, efficiency and quality . . . The Process will be conducted technically by a National Commission . . . that will behave with the consent of the HEI'S . . . and will be based on a set of guidelines that have to include the participation of the institutions themselves . . . (p. 141).

In November 1989 the National Commission for the Evaluation of Higher Education was in fact established, with a specialized staff that in May 1990 produced a new document with criteria and guidelines for the evaluation that was to be started that same year.

The Experience of the Autonomous University of Aguascalientes

Situated in the center of the country, 500 kilometers north of Mexico City, the State of Aguascalientes is one of the smaller in the Mexican Republic, with 5,471 square kilometers and an estimated population in 1990 of 750,000. More than 500,000 are concentrated in the capital city of the state, whose name is also Aguascalientes.

Established in June 1973, the Universidad Autonoma de Aguascalientes (UAA) is one of the youngest public autonomous higher education institutions in the country. New institutions of this kind have not been established since 1974, and the tremendous growth of the Mexican higher education institutes has been largely supported by the same 40 autonomous universities (which have become very large, as we have seen), and by many smaller non-autonomous technological institutes and private higher education institutes.

In 1990 the UAA has 5,200 students at the licenciatura level (roughly correspondent to the American baccalaureate level, but with a professional training emphasis: in fact all the liberal professions, as physicians, lawyers, architects, etc. are formed at the licenciatura level and do not require a master's or a Ph.D. degree).

These 5,200 students are distributed in 32 professional fields from medicine and dentistry to civil engineering and architecture; from law, business administration and accountancy to sociology, history and Spanish literature; from agriculture and veterinary medicine to biology, biochemistry and mathematics.

In addition to the licenciatura-level studies, the UAA offers technical level courses in nursing and industrial design to some 500 students, and high school studies to other 1,500 for a high total of more than 7,200.

Sixty-five percent of the institution's annual budget is devoted to teaching in these different levels, while 8 percent is related to research (mainly in basic sciences, social sciences and education, and agriculture), 7 percent goes to service activities related to the community of Aguascalientes, and the 20 percent is spent in direction, management, and support



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services.

The institution has acquired a solid reputation as one of the country's leading public higher education institutions, with an outstanding record specifically in planning and institutional research. In 1976 the UAA started its first self-study and institutional planning process, which produced its first "Plan de Desarrollo" (Development Plan) for the years 1977-1983. In 1982 the second Plan de Desarrollo was prepared, for the period 1983-1992, again preceded by an important self-study process.

The long-range planning has been integrated with short-term yearly programming and budgeting, and with assessment activities that include:

--A locally designed ability testing system for the yearly admission of new students that has been used since 1976; in Mexico there is no nation-wide system of testing. Some large private higher education institutes, such as Monterrey's Technological Institute (ITESM) are using the Spanish tests developed by the College Board in Puerto Rico. Starting in June 1990 the UAA will be the first Mexican public HEI to do the same.

--A locally designed faculty evaluation system, also from 1976, including evaluations from students, department heads, and deans. With small changes the system is still being used in 1990, and has therefore produced an almost 15-year-old series of data that allow for longitudinal comparisons.

--Starting in 1977, a permanent performance indicators evaluation system, including the publication of a yearbook entitled "Evaluation," already in its 12th edition.

--An overall curriculum evaluation for all the professional fields of the institution in 1979-1980. Since that time a regular system of curriculum evaluation has been functioning, with each professional field (32 in 1990) being evaluated every five years.

--In 1979 and again in 1983 special assessments of the University's library system have been carried out.

--From 1984 on, a dropout research covering--until 1990--13 of the 32 professional fields, using a complex causal model (related with those developed by Spady, Tinto, and others).

--In 1985, a large prospective study, that tried to forecast the needs of professionally skilled manpower for different economic branches, and the future growth of social demand for higher education, to assess the need for a new HEI in the State of Aguascalientes before the year 2000.

--From 1987, a program of alumni research.

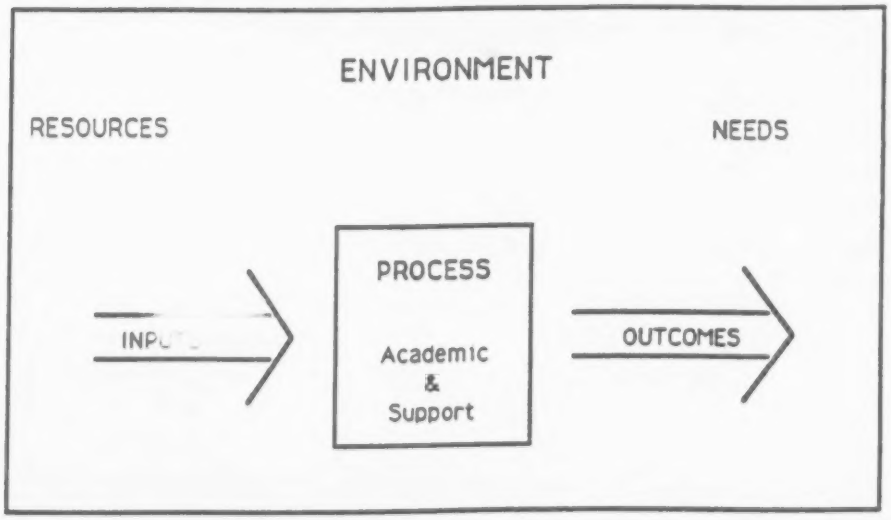
--In 1990, the Planning and Institutional Research Office of the University (Direccion General de Planeacion y Desarrollo) is already beginning to prepare the third "Plan de Desarrollo", which will cover the years 1992-2001.

As a part of the preparation for this new planning process, a new evaluation scheme is being developed, to pass from a more traditional resource-centered to a new outcomes and also process-focused approach, taking into account the different evaluation-related activities already mentioned.

The concept of "quality", and specifically of "higher education institution "quality" that underlies the new evaluation system that is being developed can be described as follows.

Figure 1

The Education System




If we conceptualize the higher education system as a central body of processes (academic, as teaching, learning, research and service, and management and support) fed by some inputs and producing some outcomes, and situated in an environment that provides the system with resources and at the same time has some needs that can at least partially be satisfied by the outcomes of the system, then it is easy to define the basic two dimensions of quality: efficiency and effectiveness.

--Efficiency is the relation that exists between the inputs and the outcomes of the system; it is a cost-benefit relationship; we can speak of the products of the system as cheap or expensive in terms of efficiency.

–Effectiveness is the relation that exists between the outcomes of a system and the needs of its environment that are supposed to be satisfied at least partially by it. In terms of effectiveness we can speak about the products of a system as useful or useless. The effectiveness dimension of quality is closely related with some other very important concepts:

–The relevance of the objectives and curricula of the educational system, in relation with the needs that the biological, ecological and social environment represents for the HEI.

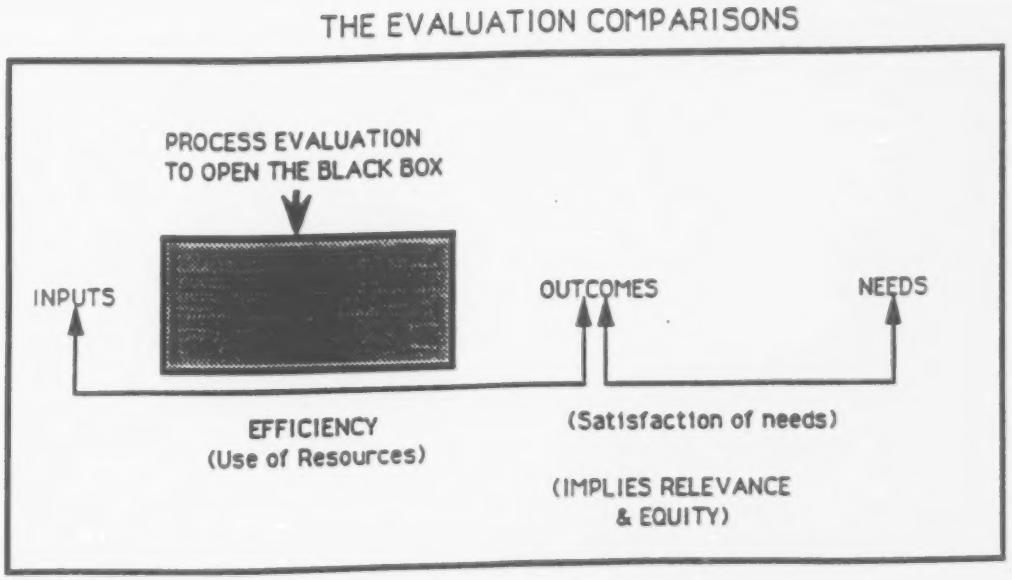
–The proportion of each cohort that has access to a particular level of the educational system.

–The attrition-retention rate, that is the proportion of each cohort that not only has access to the level, but is able to successfully complete it.

–The goals attainment level, that is the proportion of the student body that achieves the learning that is expected:

–The equity dimension that is closely related with the access retention and level of achievement questions: knowing that nature and nurture differences also produce differences in students' access, permanence and achievement. The equity dimension is the characteristic of the system that reduces those differences.

Figure 2



Syn g all these dimensions of quality, we can state that a quality education is one that:

--has cially relevant educational purposes and curricula;

--makes a substantial part of each age group reach those goals (by giving access to the particular educational level to the socially adequate proportion of each cohort; by retaining a very high proportion of them until the end of the level; by making them achieve the educational goals established by the curriculum; and by helping more those with more difficulties in order to achieve the former points;):

--and does that in the most economic way.

Another way of stating the same is to say that a quality education is one that is at the same time relevant, equitable, effective, and efficient.

The importance of establishing precisely these different quality dimensions can be appreciated if we consider that very often only the efficiency dimension is considered. As it is much more difficult to assess the relationship between educational outcomes and social needs than to assess the relationship between inputs and outputs, very often only the latter is considered.

As an "advertising-alienated consumer," that is ready to buy anything without knowing its utility because it is cheap, many higher education institutions are concerned only with cost-benefit analysis (student or graduate per capita expenditures), without caring about the value of the contributions their graduates are offering to the society in which they live and work.

Taking this definition of educational quality, we present in the following pages a set of performance indicators for the evaluation of a HEI. Some of the indicators have been used in the UAA since 1976; others are being proposed for use in the self-study process that the UAA is preparing for its third Plan do Desarollo.

The set of performance indicators includes some related specifically to one or another of the quality dime ust described: relevance, equity, effectiveness, and efficiency.

As in many cases to obtain all the information needed on some of the institutions' inputs and outco ntion is also paid to process, and some process indicators are included in the set. e constraint ourselves to the teaching function, as research and service are less develop d in the UAA.

In almost all cases the indicators can be calculated at the more global (or institutional)



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level of aggregation, or at the more specific professional field (or career) level. In the same way, it is possible to calculate the indicators for one year or for some or many consecutive years, in order to know the dynamics of the processes concerning variation rates.

Product Indicators

**Effectiveness indicators:**

Social demand approach: Proportion of the social demand satisfied
- % potential - social demand (global)
- % real - social demand (global)
- % potential - social demand (by field of studies)
- % real - social demand (by field of studies)

proportion of male-female students admitted
proportion of low-income students admitted
proportion of national vs. international students admitted
proportion of students applying for scholarships or loans
social needs approach:
diversity of professional fields (students by professional field)
adequacy of professional fields to social needs
- % enrollment by area to national goals
- % of curricula developed in relation to social needs
- % of graduates working in their professional field (after six months or more)
- % of graduates with an outstanding professional record

**Efficiency indicators:**

Total student per capita expenditures (yearly per student cost; global and by professional field)
Total student per capita expenditures (five-year periods per graduate cost; global and by professional field)
Yearly attrition rate (global and by professional field)
Generational or cohort attrition rate (global and by professional field)
Professor/student ratio (total)
Professor/student ratio (full-time)
Professor/student ratio (full-time equivalent)
Mean group size
Clerical staff/professor ratio
Clerical staff/students ratio
Square meters of area per student: - total
- buildings

- g ds
- l y space

Library vo nes per student

% c ssroom utilization (100% = 70 hours per week)

Teaching and Learning Process Indicators

**Curriculum definition and evaluation:**

--Existence of general curricular objectives explicitly related to environment needs.

--Existence of a curriculum periodical evaluation system.

-% of course programs or syllabi systematically developed and related to general curriculum objectives.

**Student activities:**

weekly course load (mean global or by professional field)

weekly hours of independent study (mean global or by professional field)

library utilization: mean of weekly hours (global or by professional field)

grade point average

% of students failing to pass one or more courses

student attrition rate

student participation in special learning activities

(remedial activities, counseling, social service, etc.)

**Faculty activities:**

Existence of presence control for faculty

% of classes imparted vs. programmed

Existence of departmental control over the teaching and learning process

% of department-controlled achievement testing

Existence of faculty evaluation systems

Mean of student ratings of teaching

Existence of faculty development programs

% of faculty having taken at least 6 credits of faculty development activities per year

% of the faculty direct teaching load

- teaching-related load
- research load
- service load
- management load

Inputs--Resources Indicator

% full-time faculty vs.

% tenured faculty vs. tot

% Ph.D. or equivalent facu s. total

% faculty with at least a full y r of graduate studies vs. total



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% faculty members by status and category
total student enrollment; rate of increase;
enrollment by professional field; rate of increase;
% of new students above or below different levels of achievement, according to the admission test
% of budget by function (teaching, research, service, management and support)
% of budget by concept (salaries, general expenditures, buildings and equipment)
% of income coming from federal or state funding or from tuition rates or other own resources)

## Conclusion

We stated before that it is easier to evaluate efficiency than effectiveness. Now we have to add that this is not due to the technical side of the question, but to the philosophical or ideological one. If we submit the concept of social needs to scrutiny, we can see that a need signifies a relationship: the distance that separates the real situation as it is in this moment, and the ideal situation, the desirable would-be. If it is not difficult to obtain a consensus about what something really is, it is much harder to concur about what we would like that thing to be.

We have to start with a broad picture of the kind of ideal society we would like to have in order to establish the needs of our present society, and decide, then, which will be the fundamental purposes of our HEI in order to contribute to the satisfaction of those needs, and finally to design the means (curricula, contents, method, teachers, etc.) that will eventually allow us to achieve the purposes and to satisfy the needs. Once the social needs and correlative institutional purposes have established the technical side of the question, the means--and that of the evaluation indicators--can be met.

Of course a total consensus about needs and purposes is not feasible nor indeed desirable, but a minimum broad philosophical working consensus is the sine-qua-non condition for advancing both the construction and evaluation of a higher education institution.

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# The Research-oriented Dynamism of Education

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## Introduction

Universities perform two functions: teaching and research. Indeed, the key principles of a university are accentuated in its goals: widening the frontier of knowledge and transmitting this knowledge (even in the undergraduate programs). Both goals have their appropriate activities, although sometimes arbitrary, which distinguish them from each other. Considering the scarcity of literature in this area, the starting point for discussion of the need for this connection was the Robbins Report, which held the essence of a university to be both research and teaching. Although a wider range of literature presents a less clear statement, according to the Reynolds Report, "The interrelationship between teaching and research is an essential means of keeping curricula up-to-date through the involvement of academic staff in original work and inquiry."

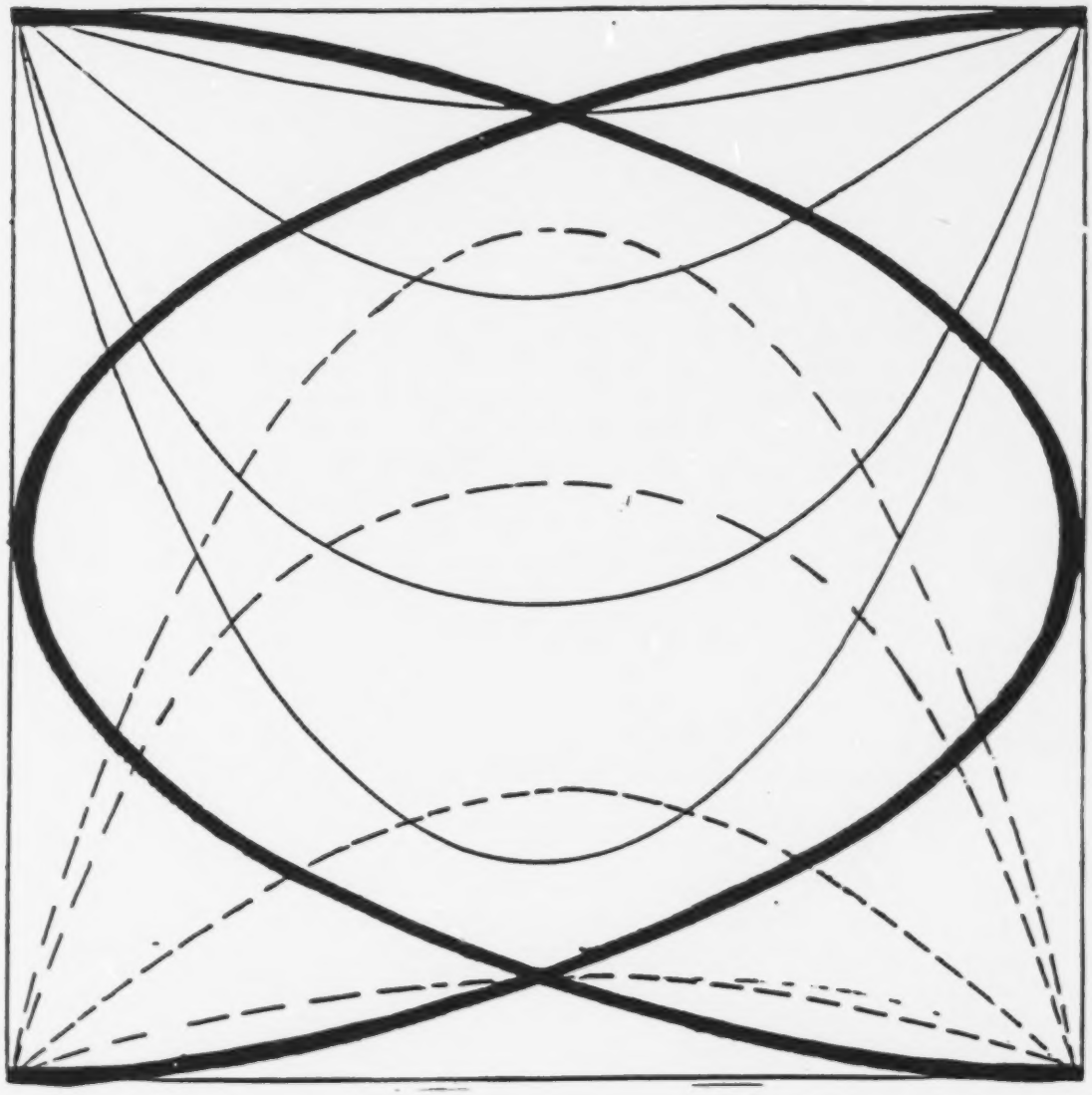
## The University as a Managerial Organization

In general terms, organizations can be considered as a series of procedures, functions. and structures: the university organization realizes both functions through two fields, one related to purposes, the other to resource allocation. Both have to take into account the principles of effectiveness and efficiency (Figure 1). Quality has an optimal situation when all fields overlap each other. This situation can be reached when a strategic policy is built up with elements such as purposes, goals, and planning and, further on, with a strategic appproach. From this introductory point of view, quality measurements have a certain interdependency: several items influence the whole approach on the organizational level of a higher education institution as well as on the level of postsecondary education in general.

## Program Organization

From the education side, the program organization process is based on four levels: curricula, teachers, infrastructure, students. Each of these categories has its own features, strategies, particulars, and consequently its own measurement of quality. In this way each class forms a quality-circle in which measurement can be stated and referred to a certain quality-reference point. Attempting to coordinate the whole measurement process brings up the problem of ranking between the quality-circles although the quality of the entire process prevails over each quality-circle.

Purposes: Effectiveness
Tension-Field



Function Field: Education

Function Field: Research

Tension-Field
Resource Allocation: Efficiency

Figure 1: The managerial situation of research
(and education) in a university

# Program/Organization Chart

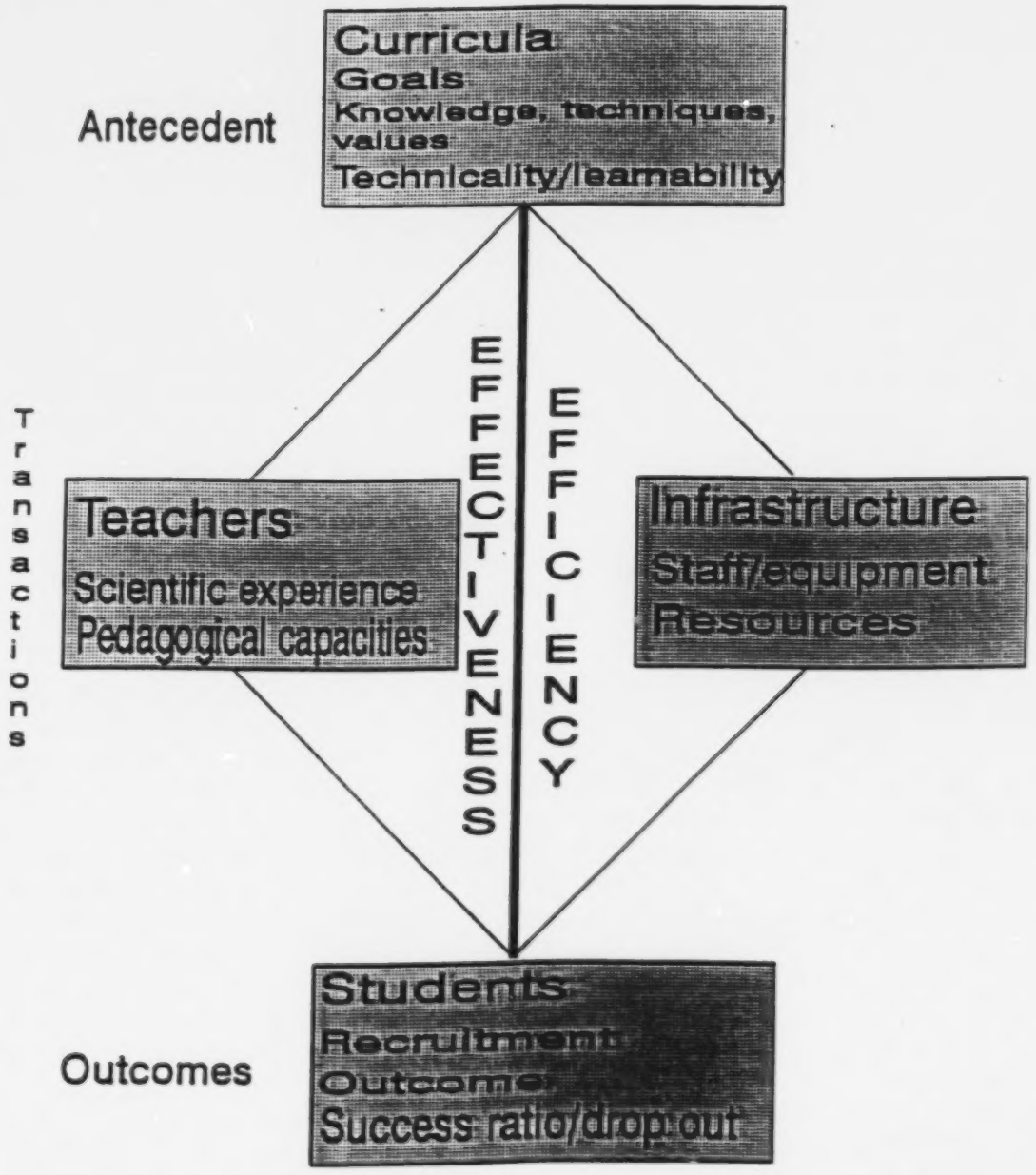



Figure 2



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There again, interdependency of measurements influences the whole process, and should be divided into two areas depending on items relating to effectiveness or to efficiency.

Quality Measurements

Out of the principle of effectiveness arises the question about degree of realization. While the principle of efficiency brings up the question of the most rational use of resources, it is connected with management and quantitative measures. Effectiveness, understood only too well in private companies as a quantitative measurement, is not useful in the context of the university, because neither goals nor results are quantifiable.

Again, the support and improvement of effectiveness for the most part will be found in the content of educa[illegible]rch-oriented policy-measures and in the control of the processes involved. Crite[illegible]iveness are organizational productivity, flexibility in adjusting to both external and environmental change, and absence of strain or tension among organizational subgroups.

In this way these structural subgroups must have the same degree of importance and influence or, at least in the subgroup quality-circles, need a well-stated ranking.

In Figure 2, the top level of this ranking represents curricula and teaching, while the second level represents infrastructure. However, in reality sometimes the inverse is true.

Education and Research Influences as Characteristic In Depth for the Measurement of Quality

The above mentioned criteria for effectiveness not only refer to teaching dynamism (transfer of knowledge, methodology, interpretation, results and conclusions are the educational foundations) but also to research-oriented dynamism. The former is certainly situated in the teaching-circle (see Figure 2) while the latter has different roots.

Indeed, the first step for the program organization--making a choice in curricula--is certainly based on, or a[illegible]ed by, the state of the art of science and research activities in the program a[illegible]al and the chosen program in particular. Well-structured subdivisions of research disciplines and worked-out research areas are preferred for graduate and/or postgraduate studies.

When carrying out in-depth analysis of the essential characteristics of a curriculum and its relationships with other circles (see Figure 2), several statements come to the fore:

--The learning outcomes of each curriculum consists of different levels:
  --knowledge (facts, concepts, generalizations)
  --techniques (processes, skills, abilities: cognitive and psycho-motor)

--The sources from which a curriculum is selected is the available culture



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which refers directly to the state of the art of that research area and/or discipline.

--There are "necessary" criteria involved in the selection of curricula such as teachability and learnability, whereas other criteria may refer to ideology (society, political, social, economic or moral values), utility, and the relative significance within the structure of intellectual disciplines.

--Structure, which refers to the order of items mandatory for instruction, is another essential characteristic of curricula.

--Curriculum guides instruction.

Consequently, the effectiveness of education and program (together with instruction and teaching) is represented by the extent to which actual outcomes correspond with intended outcomes (congruency). This refers to the different quality-circles (see Figure 2) and at least to those of curricula, teaching, and students.

Reality

Keeping these statements in mind and relating them to the improvement of quality, some universities in Europe are creating subject groups concerned with the organization, coordination, and integration of scientific research and education. These are important tools in developing proposals and working out the content of educational and research-oriented policy measures.

They also work as a peer-review system. The different subjects of a curriculum are reviewed every five years by testing. (In reality the subjects are all parts of curriculum).

The Belgian universities and authorities are concerned with a permanent evaluation of the "education-happening," in order to guarantee the scientific level and the social relevance of each degree. In this way, the Flemish Decree 1992 provides a five-year annual evaluation of university activities.

Conclusion

The measurement of quality in postsecondary education is very wide ranging, and research-oriented dynamism of education is a significant chapter. Therefore, subject-groups have an important descriptive (though not exact) and judgmental task.

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# Explaining Differences in Drop-out Between Faculties in Dutch University Education

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## Introduction

Statistical data on drop-out rates reveal strong differences between faculties. Almost automatically the question can be raised: how can these differences be explained. For this specific project the research question would be: How can differences in drop-out rates between Dutch university-programs be explained? A more or less traditional research design containing a theory, hypotheses, operationalization of concepts, choice of techniques of analysis and empirical testing, is used. The project is still in the stage of theory-development of which a brief impression will be given below.

In general, drop-out can be related to student characteristics (background and intellectual capacities) and educational factors (teacher performance, content, level, organization, planning, counseling, etc.). Although student characteristics are important we decided, for various reasons, to focus on features of the teaching process. First, not much research has been done in the Netherlands involving more than one faculty. Second, a great deal of the Dutch research in this area has been devoted to student characteristics whereas less attention has been paid to institutional and teaching factors.

A few concepts imparted in our model are derived from a teaching approach practiced at the University of Limburg. The selection of these concepts is justified by this university's low attrition rate compared to that of other universities. The University of Limburg is characterized by its high commitment to the effectiveness of teaching and the subsequent substantial efforts to renew and improve the teaching process, an essential difference with the other Dutch universities. Though these universities try to improve the feedback mechanisms regarding student performance, including the counselling of students, the leading principle still seems to be that every student is responsible for his own performance. This system relies heavily on the individual student's motivation and self discipline, a conclusion supported by a few other observations.

Characteristics o[illegible] Teaching Process at the Traditional Dutch University

First, the traditional Dutch university program consists of many different courses (subjects) with the latter representing the specializations in the discipline. During a term (trimester or semester) three or more courses are given simultaneously by means of general lectures and seminars. A term ends with a period of exams for each course. Participation in an exam is voluntary. A considerable number of students only participate in a selection of the offered exams and wait for a second or even third chance for the same course. This strategy maximizes the net study-time for a certain exam at the end of a term but leads inevitably to a duration of studies that exceeds the nominal program length, an outcome that demotivates the student.

The performance assessment procedures also contribute to a certain drop-out rate. Normally examinations are taken in written form. Due to the decentralized organization of student performance tests, correction-standards will differ between the exams and the correctors. This situation results in the use of different criteria for failing or passing an exam. In fact criteria depend on the performance level of the group subjected to judgment. A student in a relatively weak group has more chance to pass a given exam than a person of the same level in a better performing group. This psychological mechanism stems from the fact that a judge tries to avoid extreme outcomes (very high or very low percentages of failing students), and explains why attrition rates of different courses are inclined to be stable in time.

To a large degree, responsibility for the content of the courses has been assigned to the staff members as are the criteria used to establish the workload. This situation results in the establishment of courses which formally are considered to have the same workload, but in practice sometimes show great variation. It seems reasonable to assume that heavy workloads do not stimulate retention.

Finally, it is important to note that teaching activities do not hold the same prestige and status as scientific research; teaching experience plays a secondary role.

Characteristics of the Teaching Process at the University of Limburg

The University of Limburg practices a different educational teaching philosophy, as briefly described below.

Courses are planned as a sequence of six-week modules. During the six-week period, a group of students jointly analyzes a case, a task that requires multi- and interdisciplinary approaches. The group meets two times a week and discusses individual contributions to the project. The group is tutored by a member of the academic staff. In a project-meeting new tasks are discussed and assigned to the group members. At the end of each period a test is given to measure what has been learned to that point. This test is not meant to evaluate



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performance. For that purpose a completely new instrument was developed.

A multiple-choice test with thousands of items has been constructed that examines knowledge of an entire discipline. Every semester a sample of items is drawn from all these items. This so-called performance-progression test has to be taken by all enrolled students, independent of the stage of their studies. This system enables the observer to compare the performance of an individual student with his former results and also provides a comparison between students in a study stage or different stages. Due to the fact that all students have to take the same test, a high level of objectivity, validity, and reliability has been achieved. Students whose performance is too far below the mean of their reference group are offered a compensation program to remedy their deficiencies. It is important to note that an important risk of the traditional system has been overcome, namely the dependence of the results on the specific criteria used for a certain examination.

However, other advantages of the system are also obvious. First, students actively participate, not only by the regular assignment of individual tasks but also by the discussions. The student cannot escape to other courses. Group feedback forces him to do his job and not to wait until an exam takes place. Motivation is also improved by the inter- and multidisciplinary approach. Once a concrete and recognizable problem has been identified all relevant knowledge must be collected and internalized. A student learns that reality should not be experienced as a system of relatively isolated sectors but as an entity with different aspects.

The extreme specialization within the traditional educational system suggests that subjects have to be studied separately. Generally this approach has a demotivating influence on a student. Lack of coherence between subjects does cause one to wonder why a certain subject has to be studied. Theory without references to reality is often experienced as useless abstraction. The project-centered approach should overcome these difficulties. In scheme 1 we summarize a few characteristic differences between the traditional and the Limburgian system.

Does this unique approach have a negative effect on educational level? Research on this question indicates that graduates of the University of Limburg are not inferior to graduates from other Dutch universities.

However, one should take care not to idealize the Limburgian system prematurely. Until now it only has proved its value for the medical discipline, a field in the Netherlands in which students traditionally perform well. In addition, the University of Limburg has a relatively small student population. Finally, the teaching task of the academic staff is assumed to be heavier compared than that of the traditional universities.

Nevertheless it can be concluded that it is possible to reform the educational process without a loss of quality and without severe selections mechanisms, leading to a decrease in

attrition rates.

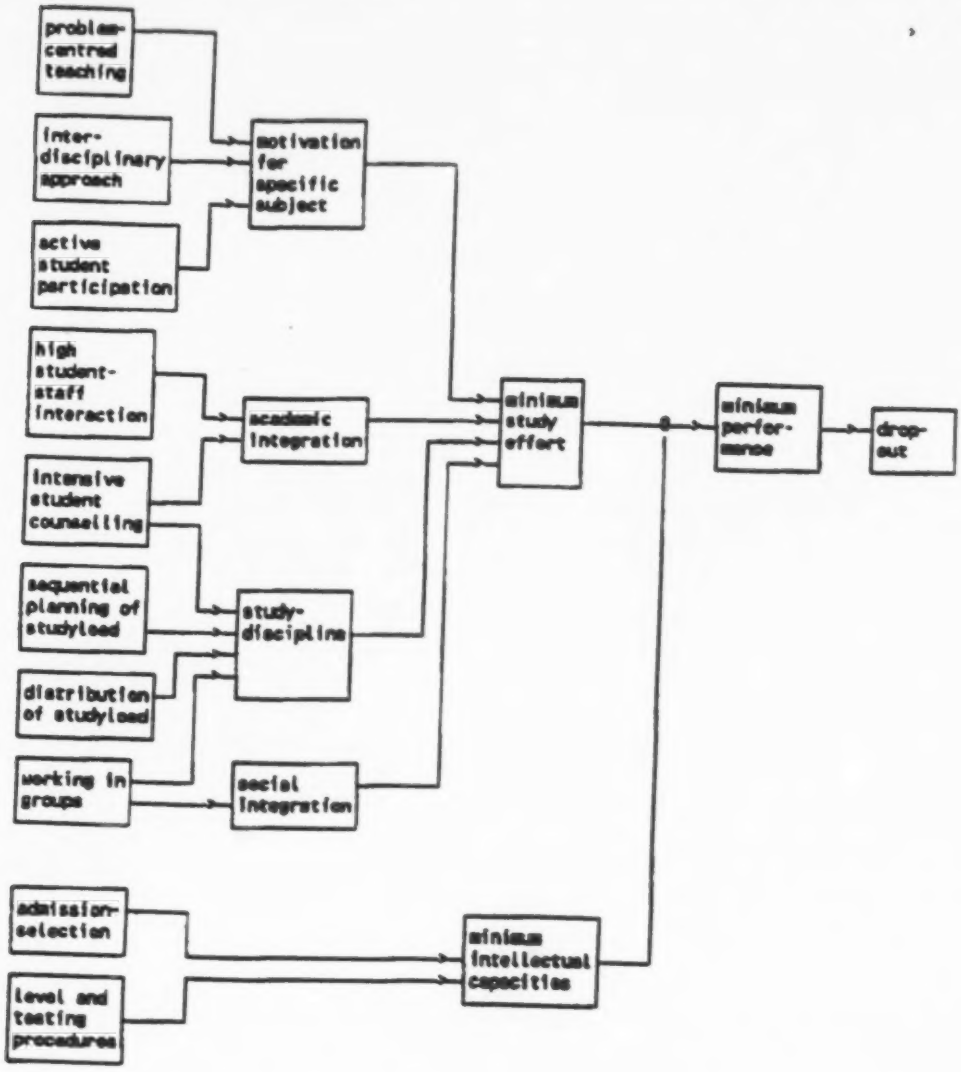
*Scheme 1* Key characteristics of traditional Dutch university education and the system of the University of Limburg

| Traditional Dutch university | University of Limburg |
|---|---|
| priority for research | priority for teaching and education |
| emphasis on individual work | emphasis on group work |
| much freedom for student | group control |
| relative low priority for counselling of students | permanent counselling and evaluation of students |
| parallel planning of courses | sequential planning of courses |
| much attention to theory | teaching is problem/project centred |
| teaching method mainly lectures and passive role for students | active teaching method aspects initiatives of students |
| mono disciplinary approach | multi/inter disciplinary approach |
| no adequate procedures to ensure objective testing of student performance | application of objective testing procedures |

## A Provisional Scheme for the Explanation of Differences in Drop-out Between Faculties in Dutch University Education

The observed differences between the teaching systems discussed above have been used to develop a theoretical scheme that may explain the differences in attrition between faculties in general. A provisional scheme (Figure 1) has been developed that relates teaching and factors such as focus on problem-solving, interdisciplinary approach, stimulation of active participation of students, frequent student-staff interactions, intensive student counseling, sequential programming of course-load, an even distribution of the work-load, working in groups, entrance-selection, level and performance-measurement, to the drop-out rate of a faculty. The different theoretical constructs have to be operationalized. Data needed for the operationalization of the concepts will be derived from written sources and by means of questionnaires. Not all the faculties in the Netherlands can be included in the project. They will eventually be matched by selected features like size and drop-out rate.

Figure 1 Theoretical scheme for the explanation of differences of drop-out between faculties in Dutch university education

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## Appendix A

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## Appendix B
## )NAL CENTER ON POSTSECONDARY TEACHING, LEARNING AND ASSESSMENT

The National Center on Postsecondary Teaching, Learning, and Assessment is a five-year, federally-funded project, aiming to discover what facilitates student learning. It will also study how to enhance the educational effectiveness of current institutional, state, and federal policies and practices. These inquiries about student learning and educational effectiveness will occur under the guise of longitudinal panel study and four research programs. Researchers will use both quantitative and qualitative research methods.

### The Longitudinal Panel Study

Researchers will follow a carefully selected sample of close to 5,000 students from over 20 colleges and universities, beginning with their freshmen year and continuing through their junior year. The two major goals of the study are:

- to estimate how ...mic and nonacademic experiences influence student learning, their attitudes toward learning, their cognitive development, and their persistence in college. (Academic experiences include the quality of teaching and classroom instruction, the level of student involvement in academic work, and the pattern of coursework taken. Nonacademic experiences include extracurricular activities, relationships with faculty and peers, and work and family responsibilities.)

- to determine the extent to which these academic experiences differ among various students attending different kinds of colleges and universities. (For example, do college experiences affect minority and non-minority students differently; men differently than women; older students in ways unlike younger ones; academically well-prepared students differently than students not as academically well-prepared? How do the different kinds of institutions--two- and four-year, liberal arts and research, commuter and residential--affect the college experiences of students?)

### Research Program on the Curriculum

Two questions define the problem addressed by this research program: What constitutes general l...ning among undergraduates? What constitutes learning with the major? Research-based know...dge about the goals, purposes, and standards of the undergraduate curriculum already exist. ...re the content and cognitive abilities and the values and norms needed by students to ...se goals. Also missing is an understanding of how that knowledge base is transforme... ...chers into effective curricula. Three projects will be completed in this area: the Indicators of Learning within the Major and Effective Patterns of Coursework in General Learning projects will examine the basic and critical-thinking skills required in the undergraduate curriculum. The Effect of Coursework on Student Learning project will focus on the common curricular experience of students in terms of how



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it is defined and identified.

**Research Program on Faculty and Instruction**

Because the classroom remains the focal point of the learning experience, a study of college-level student learning must examine the classroom experiences of both faculty and students. Of the five projects to be undertaken in this program, two focus on the faculty and three focus on instruction. The New Faculty project examines how new faculty experience their roles and how they learn the norms of the profession and of their institutions, specifically concerning teaching. The Faculty Profile project will develop a comprehensive description of America's postsecondary teachers in terms of demographic characteristics and work activities. The project on Enhancing Teaching includes several studies on the gathering and use of various kinds of information by faculty to assess and improve instruction. The Instructional Methods and Minority Students project will use learning – and teaching style research to identify instructional methods compatible with the ways minority students learn in community colleges.

**Research Program on Out-of-Class Experiences**

Important as the curriculum and classroom are in shaping student learning, ample evidence indicates that the instructor and formal instructional experiences are not all that affect student learning. As much as 85 percent of a typical undergraduate's waking hours are spent outside formal instructional settings. These out-of-class experiences may enhance and reinforce classroom learning, produce new learning, or even reduce learning by functioning at odds with the educational mission of the institution. Because of the important influences of these experiences on learning and retention, this research program will explore: (1) how students become active and involved participants in an academic community, and (2) how students' out-of-class experiences, particularly their interpersonal interactions (whether on- or off-campus), reinforce and augment--or weaken--curricular and classroom learning and achievement of broader general education goals.

**Research Program on Organizational Structure and Policies**

This project aims to identify administrative approaches to improving undergraduate teaching, learning, and assessment. Researchers here will pay particular attention to how those in an organization have created and/or can create an effective learning climate for underrepresented groups such as African Americans/Black Americans, Native Americas/Alaska Natives, Hispanics/Latino Americans, women (in traditionally underrepresented fields like science), and the disabled. They will investigate: (1) the organizational characteristics that may either help or hinder the push for innovation in teaching and learning, (2) the information and data necessary to make effective decisions relative to teaching.and learning, and (3) leadership activities necessary to create a climate for change.

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